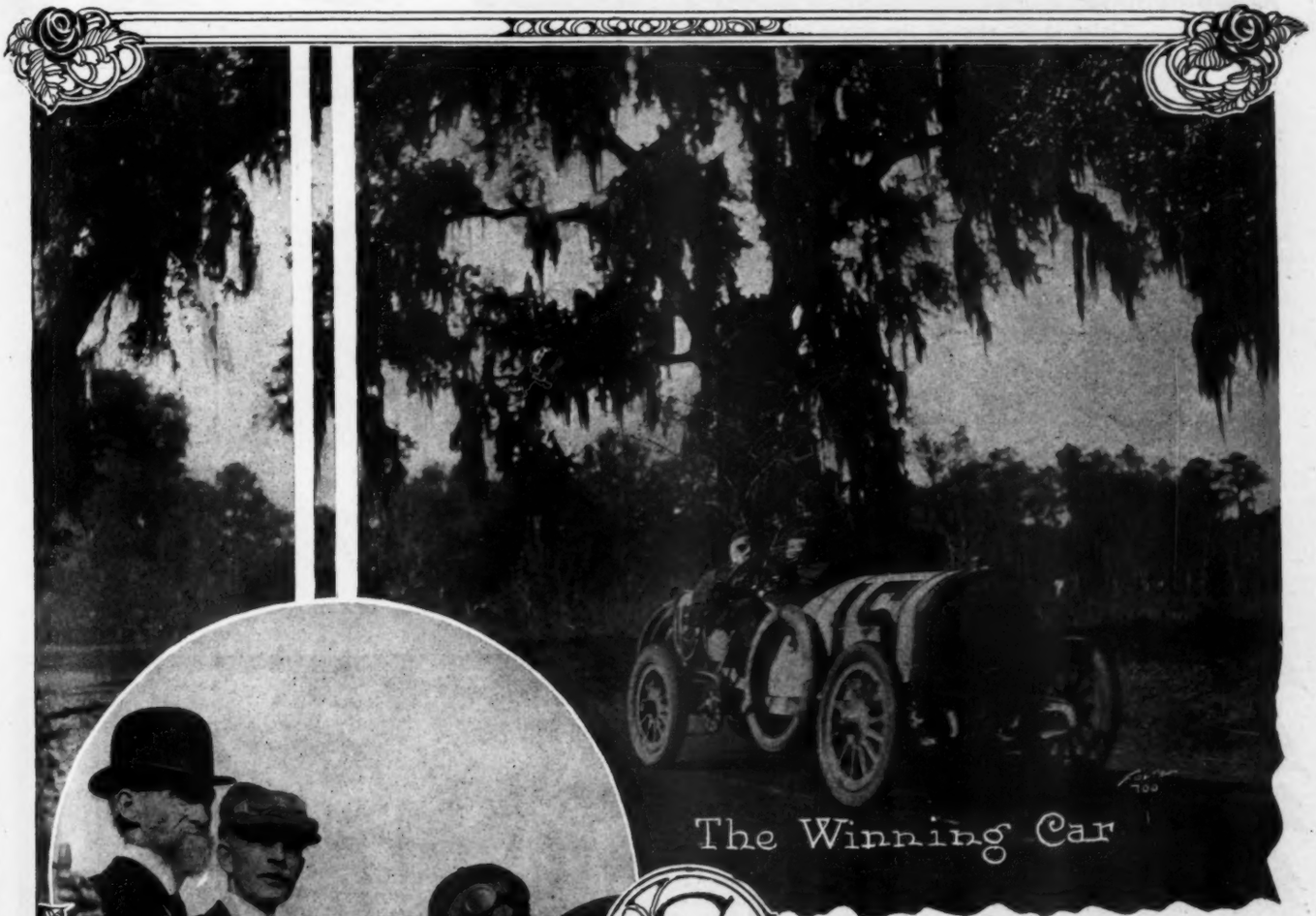
VOL. XXIII NEW YORK—THURSDAY, NOVEMBER 17, 1910—CHICAGO No. 20

THE AUTOMOBILE

Bruce-Brown Wins Grand Prize

BY MARGIN OF A SECOND—MARMON ANNEXES SAVANNAH TROPHY, AND KNIPPER CAPTURES TIEDEMAN CUP



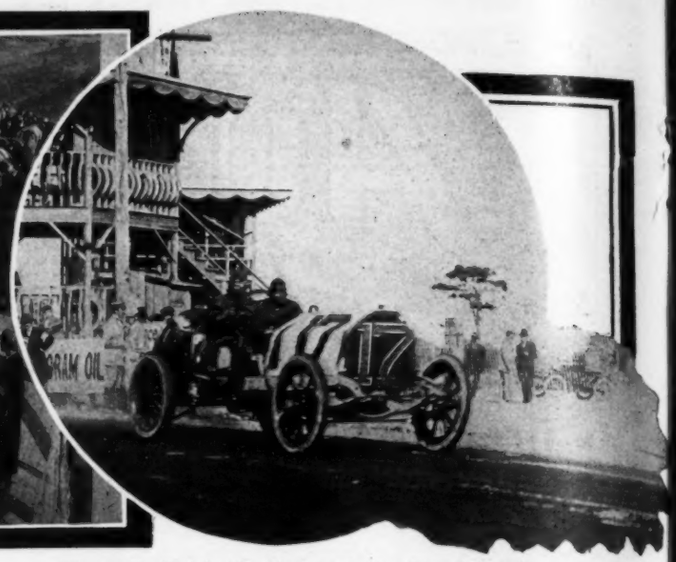
The Winning Car

Governor Brown, of Georgia, and Mayor Tiedeman, of Savannah, congratulating Joe Dawson, of Marmon fame and winner of Savannah Trophy

SAVANNAH, GA., Nov. 12—David Bruce-Brown, driving car No. 15, won the Grand Prize of the Automobile Club of America in the closest finish ever recorded in a road race, here or elsewhere. The distance was 415.2 miles, the longest race of its kind ever run, and his time was 353 minutes 5 seconds and a small fraction. Six out of the fifteen starters completed the full course, while nine fell out at one stage or another and from varying causes.

Bruce-Brown drove a wonderful race. His first ten laps were done between 14 and 15 minutes, and most of them varied only a few seconds one way or the other from 14:20. He conserved the life of his mount better than the other drivers, and simply sailed along at a very fast pace from one end of the race

Lining up for start of the Grand Prize

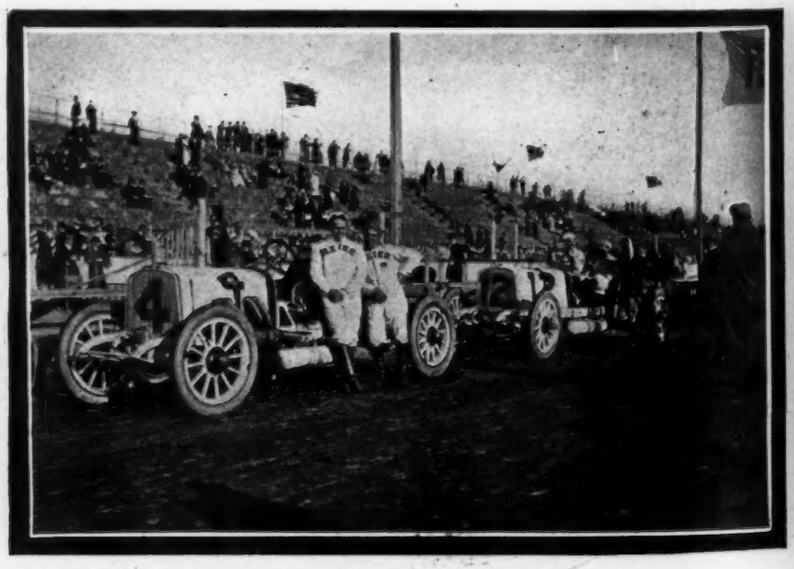


Marquette-Buick shooting past the Grand Stand

STATISTICAL TABLE SHOWING STANDING DURING EACH OF THE 24 LAPS

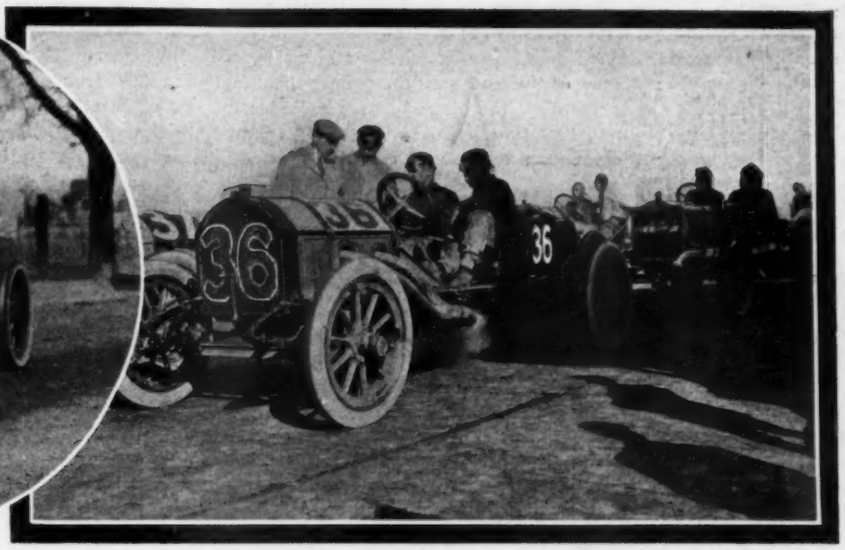
No.	Car	Driver	Miles	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Lap 6	Lap 7	Lap 8
				17.3	34.6	51.9	69.2	86.5	103.8	121.1	138.4
15	Benz	Bruce-Brown	Total time	14.28	28.49	42.57	57.12	71.33	85.59	100.26	114.46
			Lap time	14.28	14.21	14.08	14.15	14.21	14.26	14.27	14.20
9	Benz	Hemery	Total time	14.18	28.09	41.59	55.50	69.49	83.49	98.04	112.11
			Lap time	14.18	13.51	13.50	13.51	13.59	14.00	14.15	14.07
17	Marquette-Buick	Burman	Total time	15.58	30.38	46.33	63.19	78.20	93.11	109.25	125.14
			Lap time	15.58	14.40	14.55	16.46	15.01	14.51	16.14	15.49
4	Lozier	Mulford	Total time	20.23	37.43	53.42	69.53	85.47	101.49	118.24	133.46
			Lap time	20.23	17.20	15.59	16.11	15.54	16.02	16.35	15.22
12	Lozier	Horan	Total time	16.27	32.30	48.34	64.34	80.42	96.49	113.07	129.19
			Lap time	16.27	16.03	16.04	16.00	16.08	16.07	16.18	16.12
14	Marmon	Harroun	Total time	16.35	32.53	49.05	65.05	81.05	96.54	112.59	129.02
			Lap time	16.35	16.18	16.12	16.00	16.00	15.49	16.05	16.03
19	Fiat	DePalma	Total time	15.03	30.14	45.23	60.10	74.54	89.34	104.10	118.31
			Lap time	15.03	15.11	15.09	14.47	14.44	14.40	14.36	14.21
10	Fiat	Nazarro	Total time	14.31	29.09	43.28	57.33	71.23	85.14	98.56	112.57
			Lap time	14.31	14.38	14.19	14.05	13.50	13.51	13.42	14.01
6	Pope-Hartford	Basle	Total time	16.38	32.48	52.14	68.37	84.59	101.12	117.25	134.06
			Lap time	16.38	16.10	19.26	16.23	16.22	15.53	16.13	16.41
16	Fiat	Wagner	Total time	14.21	28.24	42.70	56.44	71.05	85.31	99.58	114.05
			Lap time	14.21	14.03	13.56	14.24	14.21	14.26	14.27	14.47
18	Benz	Haupt	Total time	14.30	28.56	43.32	57.37	71.47	85.33	102.07	116.04
			Lap time	14.30	14.26	14.36	14.05	14.10	13.46	16.34	13.57
7	Alco	Grant	Total time	15.53	31.25	46.49	62.23	77.55	93.27	108.54	124.24
			Lap time	15.53	15.32	15.24	15.34	15.32	15.32	15.27	15.30
3	Marquette-Buick	A. Chevrolet	Total time	14.19	28.44	42.54	63.20	79.00	96.37	115.07	130.18
			Lap time	14.19	14.25	14.10	20.26	15.40	17.37	18.30	15.11
13	Pope-Hartford	Disbrow	Total time	17.31	34.02	50.17	66.32	84.16	100.46	117.17	133.31
			Lap time	17.31	16 31	16.15	16.15	17.44	16.30	16.31	16.14
8	Marmon	Dawson	Total time	14.59	29.34	44.05	58.35	Crankshaft.			
			Lap time	14.59	14.35	14.31	14.30				

Showing home stretch with Falcar in the foreground



Lozier pair ready for the big race

Lancia, winner of the Tiedeman Trophy

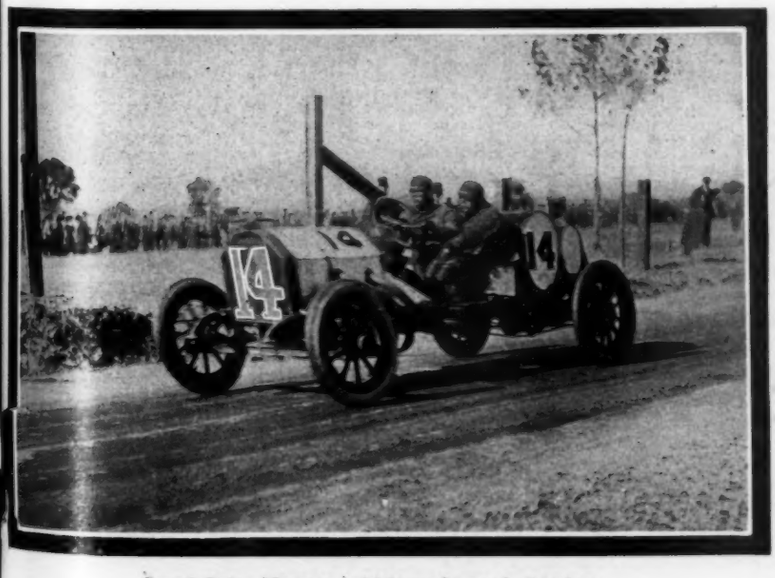


Marmon Car which won the Savannah Trophy

OF THE 15 CARS THAT STARTED IN THE GRAND PRIZE AT SAVANNAH

Lap 9	Lap 10	Lap 11	Lap 12	Lap 13	Lap 14	Lap 15	Lap 16	Lap 17	Lap 18	Lap 19	Lap 20	Lap 21	Lap 22	Lap 23	Lap 24
155.7	173.0	190.3	207.6	224.9	242.2	259.5	276.8	294.1	311.4	328.7	346.0	363.3	380.6	397.9	415.2
129.04	143.18	163.48	178.01	192.02	206.05	222.15	236.32	250.87	264.52	279.08	293.59	308.36	323.16	337.53	353.05
14.18	14.14	20.30	14.13	14.01	14.03	16.10	14.17	14.05	14.15	14.16	14.51	14.37	14.40	14.37	15.12
131.24	146.46	161.16	175.48	193.26	209.33	223.40	237.54	252.21	266.30	281.00	295.36	310.24	324.50	339.12	353.06
19.13	15.22	14.30	14.32	17.38	16.07	14.07	14.14	14.27	14.09	14.30	14.36	14.48	14.26	14.22	13.54
139.40	156.21	172.02	186.22	202.13	216.39	231.06	248.56	263.41	278.09	296.05	313.22	327.56	342.28	357.00	371.23
14.24	16.41	15.41	14.20	16.51	14.26	14.27	17.50	14.45	14.28	17.56	17.17	14.34	14.32	14.32	14.23
149.03	164.31	180.06	195.49	213.08	228.44	244.24	260.06	275.47	291.45	307.43	323.34	339.09	354.39	370.27	386.12
15.17	15.28	15.35	15.43	17.19	15.36	15.40	15.42	15.41	15.58	15.58	15.51	15.35	15.30	15.48	16.45
135.15	161.15	177.15	193.19	209.34	228.44	244.49	261.00	277.14	293.25	309.36	325.55	342.04	358.08	374.09	390.02
15.56	16.00	16.00	16.04	16.15	19.10	16.05	16.11	16.14	16.11	16.11	15.19	16.09	16.04	16.01	15.53
145.14	161.24	177.33	193.41	210.43	226.47	242.32	258.22	274.12	290.09	306.11	323.48	340.52	357.29	374.03	390.22
16.12	16.10	16.09	16.08	17.02	16.04	15.45	15.50	15.50	15.57	16.02	17.37	17.04	16.37	16.34	16.19
132.56	147.10	161.27	175.36	189.57	205.50	220.34	235.15	249.44	264.01	278.17	292.32	306.36	321.24	Cylinder.	
14.25	14.14	14.17	14.09	14.21	15.53	14.44	14.41	14.29	14.17	14.16	14.15	14.04	14.48		
129.04	143.02	157.31	175.04	189.13	203.20	218.00	232.49	250.14	274.53	Chain.					
16.07	13.58	14.29	17.33	14.09	14.07	14.40	14.49	17.25	24 39						
156.09	172.44	189.15	205.48	222.14	238.40	255.26	272.08	288.51	333.10	Valve.					
22.03	16.35	16.31	16.33	16.26	16.26	16.46	16.42	16.43	44.19						
128.11	142.17	161.06	175.09	192.03	220.24	245.40	261.43	Turned over.							
14.06	14.06	18.49	14.03	16.54	28.21	25.16	16.03								
129.54	143.37	157.20	171.09	Left course.											
13.50	13.43	13.43	13.49												
139.51	155.23	Stripped gear.													
15.27	15.32														
Crankshaft.															

Cylinders lifted.



Grand Prize Marmon which made good showing

One of the perfect stretches, showing small Marmon

to the other. His first lap was done in 14:28, his fastest 14:01, slowest 20:30, and his final round in 15:12.

It was a beautiful exhibition of steady driving at high speed and the winner did not show in the lead until the twenty-third lap when he was left out in front by the cracking of a cylinder in De Palma's Fiat. Prior to that time he had maintained a place close to the pace, but did not once show in front until it was time to win.

The rate of speed of the winner was 70.55 miles an hour, a new American road record, but failed to equal that of the Florio course.

Hemery jumped into the lead at the start, with Marquette-Buick (Chevrolet) a close second and Fiat 16 (Wagner) third. The Fiat and the Marquette-Buick changed places in the second round. This order was maintained through the third lap. Tire trouble gave the Buick a setback in the fourth and Bruce-Brown stepped along into third place behind Wagner. There was no change in the order in the fifth, but in the sixth Haupt displaced Bruce-Brown for third honors. Nazarro's Fiat, going at a perilous rate of speed and making the fastest lap of the race, closed on the leaders, finishing only 52 seconds behind. Wagner, Fiat 16, was a close third. They ran the same way in the eighth. A stop at the pits for fuel and water lost the lead to Hemery and Wagner's Fiat took up the running for two laps with Nazarro second and Bruce-Brown third. Haupt was coming with a rush and when Wagner was forced to stop at the pits he pushed to the front in the eleventh lap with Nazarro second and Bruce-Brown third.

At this stage of the race four cars were out of it on account of mechanical troubles and in the thirteenth lap Haupt met with mishap while leading the field. His car became unmanageable while traveling at high speed and shot off the course, turning a somersault and projecting the driver and his mechanic into a clump of bushes with terrific force. The yielding character of the bushes broke the fall of the men and neither was seriously hurt. Precisely what caused the trouble is problematical as the car was badly jarred by the accident.

This left Nazarro in front and De Palma, coming with a swoop, ran into second place with Bruce-Brown third once more. From then to the sixteenth round the order remained the same. Nazarro stopped in the seventeenth and De Palma succeeded to the lead, a few seconds ahead of the Italian pilot, upon whom Bruce-Brown was closing.

For the next five laps De Palma held his advantage, Nazarro going out with a broken chain after disregarding the white flag of the technical committee. Bruce-Brown was a close second until half-way through the twenty-third lap when De Palma's car cracked a cylinder and retired. At the end of the twenty-third round Bruce-Brown was in the lead by less than two minutes from Hemery, with Burman's Buick third. Hemery drove fast in the last lap and only failed to catch Bruce-Brown by a matter of 1:42 seconds. The Buick was third, Lozier (Mulford) fourth, Lozier (Horan) fifth and the sturdy Marmon (Dawson) sixth.

The Fiats, of which so much was expected, failed to finish. Nazarro made a prominent showing, covering 18 laps before succumbing to a broken chain. Wagner's car turned turtle in the seventeenth and De Palma cracked a cylinder when apparently in winning shape.

Haupt's Benz also succumbed while leading in lap 13. The Pope-Hartford pair both fell out with mechanical troubles, one suffering from valve trouble and the other with an engine difficulty. The Alco entry did splendidly as far as it went, running very evenly lap after lap. While it was not prominent at any stage, Grant was evidently pursuing the same tactics as he had used in his two winning Vanderbilt races and but for stripping his gears might have proved a factor.

The two light car races which were run on Friday resulted in victories for the favorites. Marmon 36, handled with much skill by Dawson, won the Savannah Trophy race from end to end. The race was 16 laps of the 17.3-mile course and Dawson made every post a winning post. He was sharply pushed in several stages of the running but always managed to swing past the stands with some sort of a margin. The time of the winner was 4:23:39.98 for the 276.8 miles, about 62 miles an hour. The Mercer entry which finished second driven by Washington A. Roebling II ran a gallant race. Mr. Roebling drove to get the most out of his mount and several times had the veteran Dawson doing the prettiest the Marmon could in order to keep ahead. The Mercer also made more than a mile a minute. A Fal, driven by Hughes, was a good third, having experienced considerable tire trouble. Another Marmon was running at the end and two Fals dropped out in the ninth round, one of them having been very prominent up to that mark.

The Tiedeman Trophy race at 11 laps for cars of 161-230 displacement was taken by the Lancia entry (Knipper). This car led all the way and won by a comfortable margin from E-M-F 45 (Witt), the car that showed great speed at Atlanta in its class. Three Maxwells finished the whole journey without mechanical troubles of any kind and were going about as fast as the winner at the end. Another E-M-F, No. 41, and the Cole pair, Nos. 43 and 47, did not finish.

SAVANNAH TROPHY, 16 LAPS (276.8 MILES), FOR CARS OF FROM 231 TO 300 CUBIC INCHES PISTON DISPLACEMENT

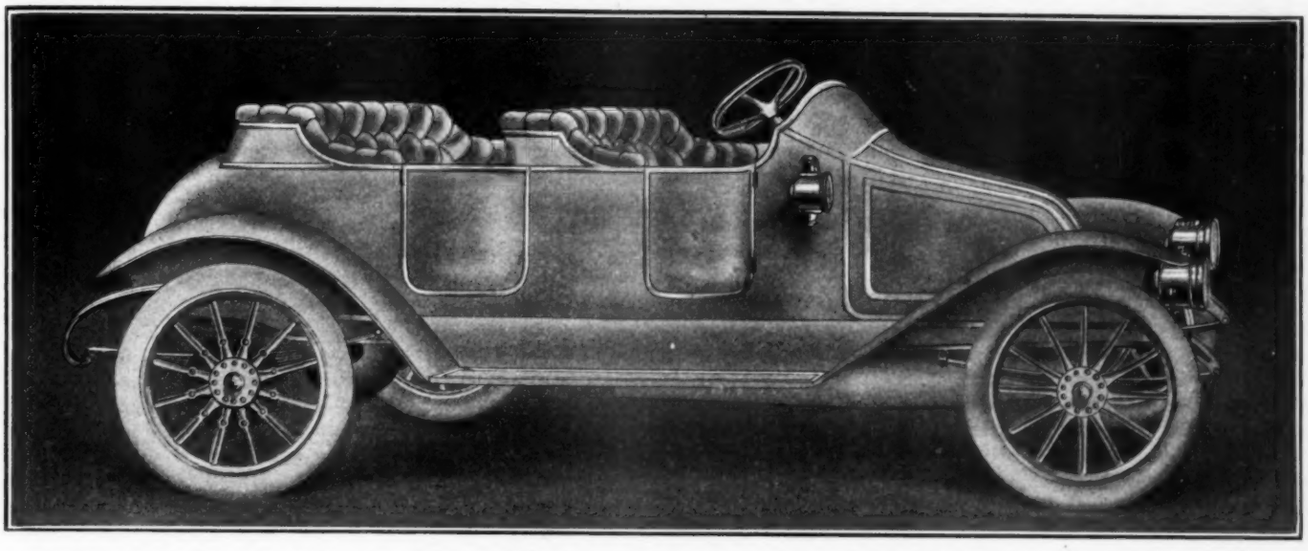
No.	Car and Driver	Cyl.	Bore and Stroke	Laps.....	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
				Miles.....	17.3	34.6	51.9	69.2	86.5	103.8	121.1	138.4	155.7	173.0	190.3	207.6	224.9	242.2	259.5	276.8
36	Marmon	4	4 23/61 x 5	Tot. time..	16:20	32:30	49:15	65:48	82:10	98:40	115:08	131:38	148:19	164:58	181:37	198:02	214:33	230:48	247:08	263:39.98
	Dawson			Lap time..	16:20	16:10	16:45	16:33	16:22	16:30	16:28	16:30	16:41	16:39	16:39	16:25	16:31	16:15	16:20	16:21
33	Mercer	4	4⅜ x 5	Tot. time..	17:19	33:55	50:36	67:08	83:32	100:02	116:29	134:51	151:42	168:13	184:46	201:26	218:03	234:25	250:47	275:25.25
	Roebling			Lap time..	17:19	16:36	16:41	16:32	16:24	16:30	16:27	18:22	16:51	16:31	16:33	16:44	16:37	16:22	16:22	24:38
31	Fal	4	4⅛ x 5¼	Tot. time..	18:01	35:32	53:01	70:52	88:29	105:59	123:38	141:13	158:48	176:10	193:39	211:08	228:29	246:05	268:35	286:11.34
	Hughes			Lap time..	18:01	17:31	17:29	17:51	17:37	17:30	17:39	17:35	19:35	17:22	17:29	17:29	17:21	17:36	22:30	17:36
32	Marmon	4	4½ x 4½	Tot. time..	16:59	36:12	66:29	95:23	112:02	128:39	145:08	161:39	178:16	194:51	211:31	228:07	244:44	Running.		
	Heineman			Lap time..	16:59	19:13	30:14	28:57	16:39	16:37	16:29	16:31	16:37	16:35	16:44	16:36	16:37			
35	Fal	4	4⅛ x 5¼	Tot. time..	17:12	33:52	50:32	67:11	83:49	100:28	117:01	133:40	Broken tie rod.							
	Gelnau			Lap time..	17:12	16:40	16:40	16:39	16:38	16:39	16:33	16:39								
37	Fal	4	4⅛ x 5¼	Tot. time..	17:40	34:50	51:50	69:01	86:01	105:55	123:05	140:10	Broken rear wheel.							
	Pearce			Lap time..	17:40	17:10	17:04	17:07	17:00	19:50	17:10	17:05								

TIEDEMAN TROPHY RACE, 11 LAPS (190.3 MILES) FOR CARS OF FROM 161 TO 230 CUBIC INCHES PISTON DISPLACEMENT

No.	Car and Driver	Cyl.	Bore & Stroke		1	2	3	4	5	6	7	8	9	10	11
				Miles.....	17.3	34.6	51.9	69.2	86.5	103.8	121.1	138.4	155.7	173.0	190.3
44	Lancia	4	4 x 4⅜	Total time.	18:10	35:45	53:15	70:42	88:08	105:44	123:18	140:38	158:28	176:52	199:22.67
	Knipper			Lap time..	18:10	17:25	17:30	17:27	17:26	17:36	17:34	17:20	17:50	18:24	18:30
45	E. M. F.	4	4 x 4½	Total time.	18:30	36:40	54:57	73:08	91:08	109:08	127:10	145:05	162:52	185:30	206:34.22
	Witt			Lap time..	18:30	18:10	18:17	18:11	18:00	18:00	18:02	17:55	17:47	22:38	21:04
48	Maxwell	4	4¼ x 4⅛	Total time.	19:46	38:57	58:16	77:51	97:26	116:50	137:25	161:31	180:53	200:11	219:19.06
	Costello			Lap time..	19:46	19:11	19:19	19:35	21:35	19:24	20:35	24:06	19:22	19:22	19:18
42	Maxwell	4	4¼ x 4⅛	Total time.	20:35	40:42	60:26	80:05	101:18	121:19	141:01	160:34	180:09	199:48	219:23.24
	Wright			Lap time..	20:35	20:07	19:44	19:39	21:13	20:01	19:41	19:33	19:35	19:39	19:35
46	Maxwell	4	4 x 4	Total time.	20:14	40:04	60:05	80:31	100:39	121:13	141:40	169:27	194:13	215:22	236:07.35
	Doorley			Lap time..	20:14	19:50	20:01	20:26	20:08	20:34	20:27	27:47	24:46	21:09	20:45
41	E. M. F.	4	4 x 4½	Total time.	19:18	46:11	Cracked cylinder.								
	Cohen			Lap time..	19:18	26:53									
43	Cole	4	4 x 4	Total time.	20:55	40:35	Cracked cylinder.								
	Knight			Lap time..	20:55	19:40									
47	Cole	4	4 x 4	Total time.	19:35	Broken crankshaft.									
	B. Endicott			Lap time..	19:35										

Devoted to Electric Subjects

EDISON NICKEL-IRON STORAGE BATTERY; SULPHATION OF LEAD-LEAD BATTERIES; EFFECT OF THE COLD ON CAPACITY; STYLE IN ELECTRIC VEHICLES



SUGGESTION OF A TOURING ELECTRIC AUTOMOBILE WITH THE BATTERY LOCATED UNDER THE HOOD IN FRONT

LECTRIC vehicles capable of going 100 miles are as readily obtainable as a pound of sugar or furniture for a house; they have all the virtues of the same able electric motors that are so advantageously used on trolley cars and the heavy trains that so enjoyably transport millions of citizens from their homes to their places of business and back again day after day with scarcely ever an interruption of any kind. The motors are noted for their great torquing ability, speed-changing facility and ease of control. Speed is but a matter of gear ratio, power has no limit placed upon it, and longevity is at home in this form of equipment.

What seems to be most in need is the suitable placing of a battery large enough to furnish all the current that will be needed in the propulsion of the automobile, and a type of car that will compare favorably with gasoline automobiles for that class of customer who prefers comfort, even luxury, letting the price come as it may. There are now available all the types of electric vehicles, excepting those of the more pretentious touring types, and with batteries that are capable of furnishing the requisite quantity of current; it is suggested that the last prop be knocked out from the clumsy procrastinator who stands in the way of a wider range of use of the electric vehiele.

In the design of a touring type of electric vehicle, there are many points to be considered, but there is no ground for assuming that all the good work that has been done on gasoline types of automobiles should be disregarded in the newer work. The place where the motor resides in gasoline cars has been selected because of its accessibility, and the constant loading effect it has on the front end of the automobile. These reasons hold equally in electric work; the battery, as the source of power, should have the place of honor, and in the "suggested" model as here presented the battery is located under the hood, the latter being of the type that can be raised in order that access may be had to the battery.

This particular car is of the shaft-drive type, the motor coming just where the transmission gear would be in a gas car. In an electric vehicle the motor does two things, it takes electric energy from the battery and transforms it into its mechanical equivalent and it also serves as the speed-changing unit. The motor would take up no more room than is required for a transmission-gear system, nor is it more necessary to have access to the motor than it would be to get at and work upon the transmission gear. This is proven by the sturdiness of the motors that work so well under trolley cars.

Back of the motor the construction would be precisely the same as that for a gas car; the reasons for having it similar are just as they normally stand—the chassis, in view of the road conditions, speed, load to be borne, etc., being the controlling element. There may be many reasons why some other form of automobile will better serve the intended purpose, but the point that is here being made is that the electric vehicle should be on a more graceful basis than it is; automobilists should not have to go against their inclinations and tastes when they attempt to take advantage of the favorable and enjoyable characteristics of the electric method of propelling automobiles.

Electric Cars in Road Run

COLUMN OF THIRTY-NINE PLEASURE VEHICLES START IN PHILADELPHIA "NORTH AMERICAN" EVENT THROUGH QUAKER CITY STREETS

PHILADELPHIA, Nov. 11—Ranging along a mile or more of highways in Philadelphia and adjacent counties, a column of 39 electric pleasure cars paraded for 50 miles to-day in the first run ever given exclusively for this class of automobiles. The run was promoted by the Philadelphia *North American* and at 10 o'clock the head of the column of contesting cars was set in motion from in front of the home of the big newspaper.

The cars moved away from the starting line without the sputter and noise that always accompanies the start of a gasoline car event and at intervals of 10 seconds, thus the contestants were always in sight of one another.

Officials of the Quaker City Motor Club had charge of the administration of the run and acted with their usual precision and skill. R. E. Ross was referee; G. Hilton Gantert, starter, and Paul B. Huyette had charge of the timing and scoring.

In the column were twelve Woods cars, three Bakers, three Babcocks, nine Detroits, four Studebakers, one Clark, six Waverleys, and a Rauch & Lang. Nine of the contesting cars were driven by women, all of which finished the whole course.

The way was laid out through North Broad street to Fairmount Park, over part of the course of the Fairmount Park Road Race to Ardmore and Bryn Mawr. Stop for luncheon was made at the Merion Cricket Club on the Lancaster Pike, where an hour's control was established. A delightful buffet luncheon was served in the balcony dining room of the club.

The return trip was made early in the afternoon, the cars checking in at the North American Building between 3 and 4 o'clock. There were originally 41 entries in the run, but two cars failed to start. One of these had been shipped by freight and was lost in the maze of 27 freight depots of which Philadelphia can boast.

Of the 39 that participated, all but three completed the full course. The roads selected embraced every variety of good road possessed by Philadelphia as well as short stretches of highway that could not be so designated. There were five considerable hills on the way, one of which was about 10 per cent. gradient and another a very long 4 per cent. rise. In Fairmount Park the little hills are numerous, but no account is taken of them because the surface of the roadways was so perfect.

All the way on the out trip the contestants faced a stiff northwesterly wind which proved so strong that in places it was difficult to coast down a gentle grade.

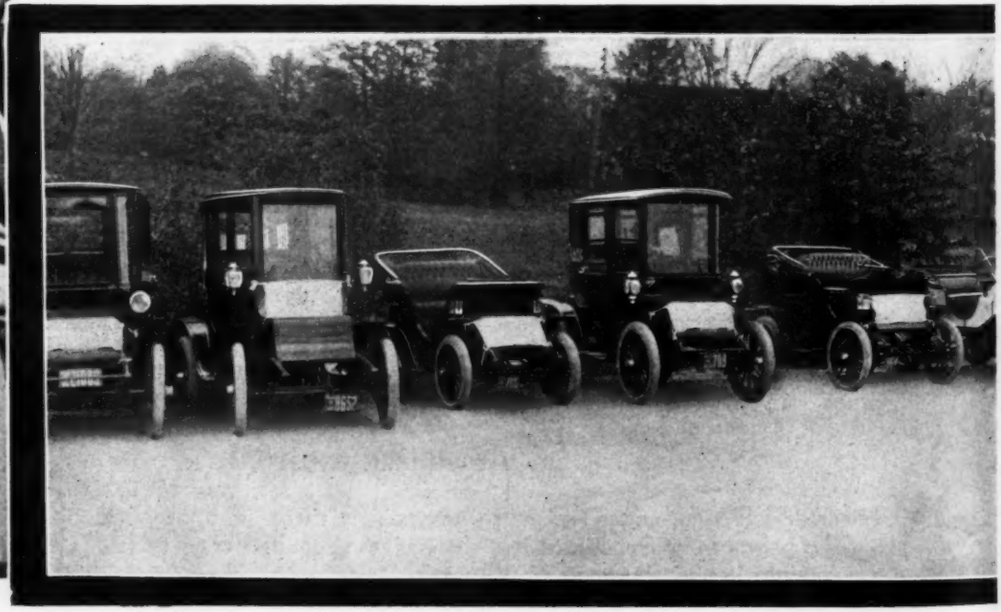
Throughout the trip the cars demonstrated their sturdy qualities as hill climbers and from one end of the run to the other the long line of electrics attracted much attention.

The prize winning and losing had nothing whatever to do with the performance of the cars. It was sheer guess and the plan by which the winners were determined was as follows: When each car checked out the entrant handed to Mr. Huyette a sealed envelope containing the number of hours, minutes and seconds in which he or she estimated that the trip ought to be made. These times were added together and averaged and the result was 4:12:24 2-3 elapsed time. Of course, in order to participate in the prizes, the contestants were obliged to complete the run within the rules. These were simple and informal and did not require difficult things of the cars.

Four handsome prizes were hung up by the *North American*, two cups for the male contestants whose running time was nearest to the average figures and two for the ladies.

Mrs. B. L. Townsend, entrant of a Baker car, made the distance in 4:14:20 and won a gold mesh purse of handsome design. Mrs. E. V. Stratton, in a Waverley, was next nearest to the secret time and was awarded a silver mesh purse. Her elapsed time was 4:16:45. The men's prizes were won by Dr. C. W. Hough-

Dr. Mary Griscom,
Detroit Electric, No. 24



Scene at the handsome grounds of the Merion Cricket Club,

ton, who drove a Studebaker in 4:14:45, and by the Waverley Electric Company in 4:20:28. Dr. Houghton was given a magnificent cup and a smaller one was given to the company.

The whole idea of the run was to demonstrate the capability of the electric automobile under conditions that closely approximated actual service, and after it was over contestants, agents and promoters expressed themselves as being thoroughly satisfied with the result.

OFFICIAL TABULATION OF RESULT OF "NORTH AMERICAN'S" ELECTRIC PLEASURE VEHICLE RUN

No. Car	Entrant	Driver	Handicap Start 10 A.M. M.S.	Finish H.M.S.	Elapsed; 1 hr. ded. (lunch) H.M.S.	Contest's est'd time H.M.S.
1—Baker	Reamer & Haines	H. H. Kirkpatrick	..	3:01:20	4:01:20	4:12
2—Baker	Reamer & Haines	C. A. Haines	10	2:59	3:58:50	3:30
3—Babcock	F. W. Eveland	John B. Hill	20	2:55:30	3:55:10	4:37:30
4—Babcock	F. W. Eveland	F. W. Eveland	30	3:21:20	4:20:50	4:40
5—Detroit Electric	Thomas F. Grugan	Thomas F. Grugan	40	2:57:30	3:56:50	3:12
6—Woods Electric	Mrs. Thos. F. Simmons	Mrs. Thos. F. Simmons	50	3:04:50	4:04	4:37
7—Studebaker	Studebaker Co.	J. W. MacMullin	1	2:48	3:47	5:25
9—Clark Electric	A. F. Clark	A. F. Clark	1:20	*2:55		3:15
10—Detroit Electric	J. C. Parker & Son Co.	C. B. Hoffer	1:30			x3:15
11—Detroit Electric	Anderson Carriage Co.	W. Reese Parker	1:40	2:39:30	3:37:50	3
12—Detroit Electric	H. E. C. Nennich	John Geiss	1:50	3:06	4:04:10	4:28
13—Woods Electric	Miss A. M. Kelly	W. H. Metcalf	2	3:05:45	4:03:45	4:25
14—Woods Electric	J. C. Bartlett	J. C. Bartlett	2:10	3:06:15	4:04:05	4:08:32
15—Woods Electric	Woods Electric Garage	Arnold Neirring	2:20	2:48:30	3:46:10	4:10
16—Waverley roadster	Waverley Electric Co.	George A. Fort	2:30	3:47	4:44:30	4:25
17—Waverley runabout	F. B. Rutherford	F. B .Rutherford	2:40	3:41:07	4:38:27	4:32
18—Waverley roadster	T. Munroe Dobbins	Emlen S. Hare	2:50	3:46:52	4:44:02	4:18
19—Detroit Electric	G. Heide Norris	R. L. Heberling	3	2:15	3:12	3:08
21—Detroit Electric	Lincoln K. Passmore	J. Allan Passmore	3:20	3:34:50	4:31:30	3:30
22—Woods Electric	Woods Electric Garage	Leonard H. Worne	3:30	3:02:30	3:59	4:05
23—Detroit Electric	William H. Horstmann	William H. Horstmann	3:40	3:28:30	4:24:50	4:44
24—Detroit Electric	Dr. Mary W. Griscom	Dr. Mary W. Griscom	3:50	3:03	3:59:10	3
25—Studebaker	Miss M. E. Morrison	Miss M. E. Morrison	4	3:22:50	4:18:50	4:58
26—Woods Electric	Dr. A. A. Apple	Dr. A. A. Apple	4:10	2:54	3:49:50	4:35
27—Detroit Electric	Abram C. Mott	R. T. Alford	4:20	Did not check in Merion.		2:50
28—Rauch & Lang	General Motor Car Co.	S. S. Crawford	4:30	2:49:30	3:45	4:10
29—Woods Electric	Dr. E. B. Fanning	Dr. E. B. Fanning	4:40	4:57	5:52:20	5:45
30—Waverley	Waverley Electric Co.	Harry Peyton	4:50	3:25:18	4:20:28	4
31—Waverley	Mrs. George A. Fort	Mrs. George A. Fort	5	3:32:15	4:27:15	4:32
32—Woods Electric	Mrs. J. C. Bartlett	Mrs. J. C. Bartlett	5:10	3:06:30	4:01:20	4:10
33—Waverley	Mrs. E. V. Stratton	Mrs. E. V. Stratton	5:20	3:22:05	4:16:45	5:26
34—Studebaker	Dr. C. W. Houghton	Dr. C. W. Houghton	5:30	3:20:15	4:14:45	5
35—Woods Electric	A. C. Chatman, 3d	A. C. Chatman, 3d	5:40	3:09:25	4:03:45	4:20
36—Waverley	James S. Chamberlin	James S. Chamberlin	5:50	3:43:25	4:37:35	4:20
37—Woods Electric	Mrs. W. P. Smith	Mrs. W. P. Smith	6	3:01:30	3:55:30	4:30
38—Woods Electric	Margaret T. Harper	T. L. Harper	6:10	3:02	3:55:50	4:19
39—Woods Electric	Dr. Caroline M. Purnell	Dr. Caroline M. Purnell	6:20	3:10	3:54:40	4:10
40—Babcock	Phila. Electric Co.	W. A. Mainwaring	6:30	Did not check in Merion.		4:15
41—Baker	Mrs. B. L. Townsend	O. H. Hasselbaum	6:40	3:21	4:14:20	4:07

*Did not go all course
xChecked in Merion, but did not finish run.

The fastest time was by a Detroit car, which covered the course in an average of 16.6 miles an hour. Two of the Detroit cars were among the missing at the finish of the run and the Clark entry furnished the other unfortunate.

No official observers accompanied the cars, as the whole course was under direct observation and the rules were so broad and elastic that minor technical and mechanical faults were not considered.

Car No. 29, a Woods, attracted considerable attention at the start and finish and at the mid-control. This car is of 1905 model and except for the fact that its battery was short it performed creditably, although it finished at the end of the procession.

They said that the field of the electric is distinct from that of the gasoline car and the presence of so many women in line explains a portion of their line of reasoning. They also pointed out that the electrics are specially useful for town car service.

where the participants in the electric run stopped for lunch

Mrs. E. V. Stratton, Waverley, No. 33

Yonkers Meet Closes Season

MT. VERNON AUTO CLUB CONDUCTS SUCCESSFUL RACE PROGRAM DESPITE POSTPONEMENTS AND ADVERSE WEATHER CONDITIONS

DESPITE two postponements, cold weather and a 40-mile gale of peculiarly penetrating character, the fall race meeting of the Mt. Vernon Automobile Club at Empire City race track, near Yonkers, proved a success. Motor enthusiasts to the number of about 3,000 braved the weather to attend and they were rewarded by seeing some good sport.

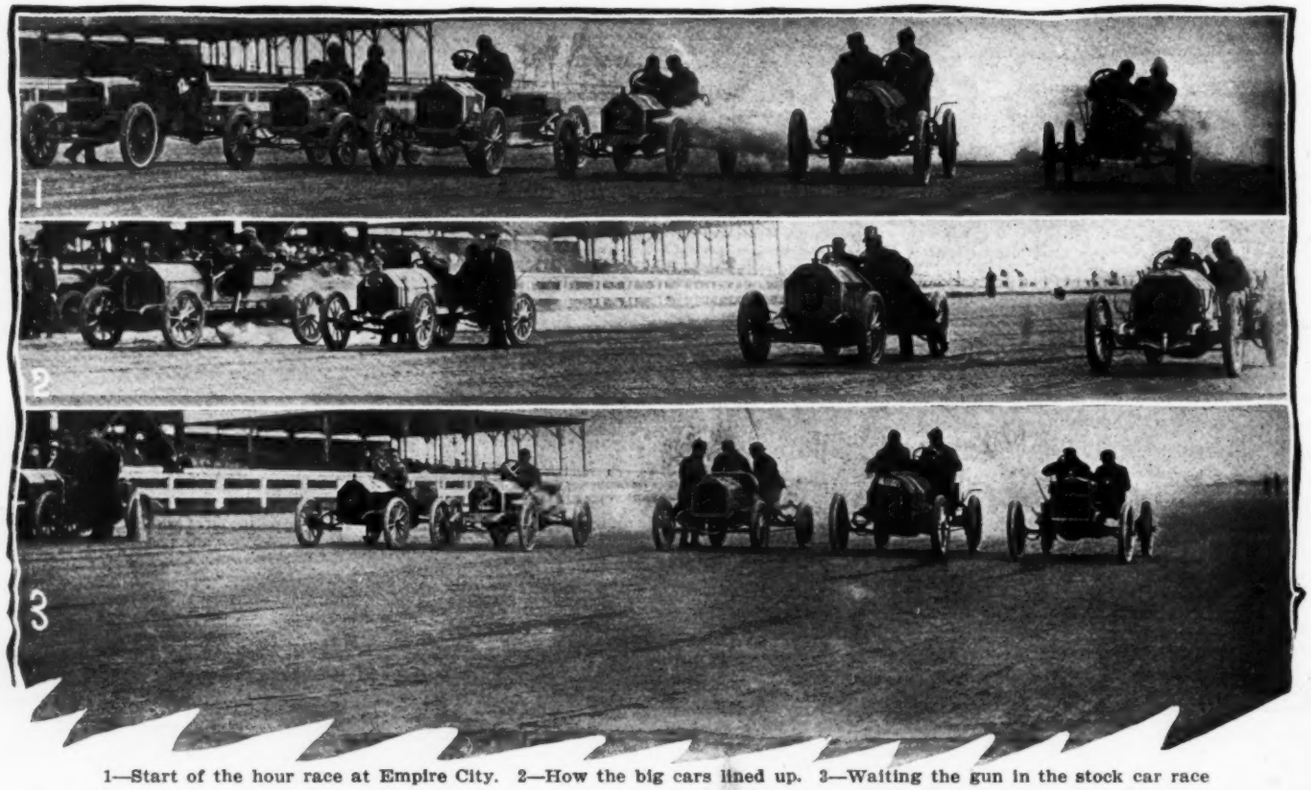
The first event carded was an hour race in which six cars participated. They were a Maxwell, Black Crow, Buick, two Hupmobiles and a Reo. In addition to a purse of $250, which was divided among the first three, the Splitdorf Magneto Trophy went to the winner. The race was exceedingly well contested throughout. The Maxwell jumped into the lead at the start with the Black Crow of Rost's in closest attendance. After three rounds, the Reo suffered a broken wheel at the head of the stretch and it required half an hour to replace the part. The car was started again and at the end of the hour had made 15 laps.

The little Hupmobiles did not have enough power to keep up with the bigger cars and were lapped after the eleventh mile. They continued to the finish, however, and made 38 miles each without mechanical difficulty. In the meantime it was a royal struggle between the leaders. The Maxwell, hard-driven was forced further to the front for a dozen miles, opening up a gap of nearly a lap from the Black Crow and Buick. These cars took a spurt after 30 miles had been done and gradually closed upon the pacemaker. The time was too short to catch the Maxwell, however, and the red car came to the wire first by about two furlongs. The Black Crow, running very smoothly, took second place from the Buick which fell back in the final spurting.

The Vanderbilt Cup Mercedes, driven by Spencer E. Wishart had too much power for the field in the second event at ten miles, winning from a Stearns, another Mercedes and an Allan-Kingston.

The Reo which met misfortune in the first event captured the ten mile stock chassis race after a battle with the Buick. The winner's margin was 1 second. Maxwell, 16, finished third.

The five-mile free-for-all handicap drew a big field, but the Vanderbilt Cup Mercedes from scratch was working well and picked up the field handily. The last two races on the card for amateurs and club members were consolidated and run off as one race. The Stearns entry and a Mercedes entered by Harold Mendel had a neck and neck struggle for first honors, while the Black Crow, driven by Otto F. Rost was a bang-up third, ten seconds back of the leaders. The Overland wind-wagon gave an exhibition. The summaries:



1—Start of the hour race at Empire City. 2—How the big cars lined up. 3—Waiting the gun in the stock car race

ONE HOUR RACE, SPLITDORF MAGNETO TROPHY

Car	Driver	Distance
Maxwell	C. W. Lowa	44 1-2
Black Crow	O. F. Rost	44 1-4
Buick	E. L. Haas	43

TEN MILES FOR CARS OVER 300 CUBIC INCHES

Car	Driver	Time
Mercedes	S. E. Wishart	10:52
Stearns	M. McBride	11:35
Mercedes	H. Mendel	11:45

TEN MILES FOR CARS UNDER 230 INCHES

Reo	P. Haycock	13:52
Buick	P. von Bartmer	13:53
Maxwell	C. W. Lowa	14:46

FIVE MILES, FREE-FOR-ALL, HANDICAP

Mercedes	S. E. Wishart	5:23
Stearns	E. L. Haas	5:46
Mercedes	H. Mendel	5:51

TEN MILES, CLUB MEMBERS, HANDICAP

Stearns	E. L. Haas	10:55
Mercedes	H. Mendel	10:56
Black Crow	O. F. Rost	11:06

Lead Battery Trouble

Sulphate Smothers the Active Salts; Chemical Asphyxiation Takes Place

POSITIVE plates of lead-lead batteries are ready to be discharged when all the salts of lead are reduced to peroxide of lead. In actual practice, it is an unfortunate fact that from 30 to 50 per cent. of the peroxide of lead is so isolated by lead sulphate that it is never reduced to sulphate, and the capacity of the battery is therefore limited by the value of the unconverted peroxide. In a word, sulphate of lead forms over the peroxide of lead and smothers further action, hence the suggestion of chemical asphyxiation. It was pointed out by Professor Robertson that the smothering action of the lead sulphate is greatest when the rate of discharge is maximum; this fact accounts for the reduced weight efficiency of batteries that are placed to do vehicle work, in which the rate of discharge is necessarily high. In vehicle batteries, on this and other accounts, the plates are made relatively thin, and an attempt is made to increase the "fluffiness" of the active material in order to afford better paths for the sulphion of the electrolyte which must reach every particle of the active material before it can be converted into sulphate of lead. It is a great misfortune that "rubbish" salts of lead (isolated particles of a mud-like consistency) accumulate at a too rapid rate, clogging up the passageways and ultimately rendering the battery useless.

Play It on the Piano

The Man Who Uses a Dirty Rag to Clean off the Automobile Body Is Requested to Try It upon His Piano at Home—By W. L. Stewart

THE average automobile owner or dealer has a very faint idea as to the method pursued in producing that beautiful mirror-like effect on the finished body of an automobile, and a much smaller percentage of them have any idea as to the method to be pursued in preserving that finish which is of so much interest to the man that prides himself on the appearance of his car, or the dealer who realizes the importance of the beauty of the car in making the sale. The following is the process used by the large manufacturing concerns in finishing a car:

The body is first sand-papered, after which it is given a coat of oil which is allowed to dry for 24 hours. Then the priming coat of lead and oil, then another drying spell of 24 hours, after which it is gone over with hard putty. Next comes a coat of filler, which is allowed to dry for 24 hours; the last item is repeated four to five times, with 24 hours' drying time between each coat.

Then the surface is sand-papered down smooth and the first coat of color applied and allowed to dry for 24 hours, after which the second coat of color is put on.

Then follows one coat of rubbing varnish, which, after being thoroughly dried, is rubbed down with pulverized pumice stone, then the body is striped or finished with any ornamental design that is required, after which the second coat of rubbing varnish is put on, allowed to dry and is then rubbed down, after which the finishing coat is applied and is left to dry.

The above complete, you have a finished surface equal to a mirror.

Now the question is how to preserve that beautiful luster.

Everyone tells you how to protect your tires. How to protect your engines. How to prevent this trouble, and how to prevent that trouble.

But as yet no one has ever attempted to enlighten you on one of the most important items in the trouble line, one that creeps on you unawares and when once there takes from $50 to $100 to repair it. The item in question is the appearance of your car, one that has as much if not more to do with your final decision in selecting your car than any other.

To prevent your car from assuming a dull, faded and unattractive appearance it requires your most careful attention.

The occupants of a highly polished car are the ones that enjoy the ride. The friend that comments on your car remarks the appearance first of all.

The writer on a recent visit to one of the downtown garages came very forcibly in contact with the advisability of the owner keeping his car in first-class condition as to its appearance.

There were two cars on the floor, same model, same make; one had been taken care of and the other neglected. The owners of the cars wanted to sell them and in the trade that ensued the man that owned the car that was clean and well-kept received $300 more for his car than the man with the car that was dirty, scratched and ill-kept. The dealer explained that the good-looking car caused him no trouble or delay in selling it and getting back the money allowed on the new car. While in the case of the neglected car, it was a plain case of having his money tied up for from four to eight weeks while the car was being repainted and refinished at a cost of from $75 to $150 or possibly more. It easily pays to keep a car in good condition as to appearance.

The dealer went a little further in his talk on appearance and the method of cleaning used by a great many chauffeurs. When they start to clean a car they hunt around for a piece of waste and when found it more than likely is taken out of an old tool box; it is then rubbed on the varnished parts that have been partly washed, covered with grease and mud spots here and there; the grease spots are smeared over about four times the amount of space they originally covered and the sand and mud are rubbed over another four times the space they covered; the result is a smear that will catch all the dust and a lot of sand scratches.

At this stage he branched off to remark, "Can you imagine anyone going into your parlor and trying to polish your piano with an old dirty piece of waste? What you would do to them would be enough. You should at least be as careful with a machine that cost you as much as five or ten pianos."

A handsome looking car is a thing of beauty and a joy forever.

In buying a body polish get the best and don't buy one that you happen to find because it is cheap. The best is the cheapest.

Keep Lead Batteries Warm

Output of Lead Storage Batteries Is Reduced by the Cold

WINTER service of electric vehicles is somewhat marred, due to the influence of low temperature upon the output of the battery. The highest obtainable output is realized at temperatures not far from 90 degrees Fahrenheit, but as the temperature is lowered the battery discharge becomes more meager, falling off to a level that seriously affects the service when the temperature is hovering around the freezing point. It has been pointed out that the capacity of a lead-lead battery falls off at the rate of about 1-2 of 1 per cent. per degree Centigrade lowering of the temperature between 22 and 0 degrees Centigrade; that is to say, between 71.6 and 32 degrees on the Fahrenheit scale, remembering that 32 degrees Fahrenheit is the melting point of ice, and that 72 degrees on the same scale is average Summer temperature. But the temperature is frequently 100 degrees Fahrenheit in the Summer time and it not infrequently falls to zero in the Winter time. It is during these extreme conditions that batteries suffer most; they overheat on the hottest days and the electrolyte becomes so viscous on the very cold days that the results are only to be improved if a means is afforded for keeping the batteries under a more even condition of temperature than Nature seems to practise.

Don't make haste when you are making a mistake; it doubles the length of the road to success.

Don't be blind; if you do not understand how your motor is lubricated, it may be because it is not being lubricated. Find out where you are at.

Remy Kick Switches

Three Designs of Kick Switches for Ignition Control Systems

KICK switches are looked upon as a great convenience, but the practice of kicking an ordinary switch leads to brutal results, the switch not being capable of withstanding the abuse. The Remy Electric Company, of Anderson, Ind., recognizing the desirability of providing a kick type of switch to be placed upon the dashboard at a convenient point so that the autoist can throw from battery to magneto, or into neutral, as the case may be, by a simple foot movement without disturbing his control of the car or himself, has placed upon the market a line of this equipment as here illustrated.

Type-A switch is made either for a hand key or kick pedal. As shown in Fig. 1, this switch is mounted upon a highly polished coil box. This coil is practically the same as was used with their 1910 apparatus. Type-B switch, as shown in Fig. 2, is also made with either a hand key or a kick pedal. This switch is very compactly built and was designed for small and already crowded dashes, or where the dash was to be entirely plain and unencumbered.

Both of the above switches are of metal finished in black and brass. The hand key is hard rubber and of the conventional shape. The kick pedal is brass; the upper part has a sand-blast finish and the lower part is polished.

Type-C switch, as shown in Fig. 3, is made up as a kick switch only, and when installed is almost flush with the dash, as can be noted from the illustration. This switch is of brass throughout, and with its sand blast and polished finish makes a very handsome appearance. All of these switches are equipped with a hard-rubber push button for starting the motor on the spark without cranking when batteries are wired in connection.

These kick switches are all provided with a detachable key which can be conveniently carried in the operator's pocket. The removal of this key makes the switch inoperative and provides against theft of the car. One characteristic of these switches is the ease with which they may be installed. There are no soldered connections to make, all of the wires being cabled and each wire has a terminal clip. Each of the two cables of the dash kick switches is plainly marked. The wires composing the cables are in color and are to be connected to corresponding color binding posts. The cables are equipped with a brass diverging device which holds each wire out at the proper angle for connecting.

Storage Battery Diseases

Sulphate of Lead is the Normal Product

CONSIDERING the forms of storage batteries that are made entirely of lead, for both the positive and the negative elements, using an acid for the electrolyte (the solution), the tendency of the acid of the electrolyte is to convert lead, and absorbing the sulphion of the electrolyte in the process.

Starting out with peroxide of lead as the active material of the positive plates, and spongy lead as the active material of the negative plates, the mere presence of an electrolyte to supply the sulphion is all that remains as requisite for the delivery of an electric current. But in the delivery of the current there is a corresponding chemical change; the peroxide of lead is reduced to lead sulphate, and the spongy lead is also reduced to lead sulphate. Why should there be any question about this sulphion being abstracted from the electrolyte? This sulphion is taken up by the active material of the respective plates and the result is sulphate of lead. Now, sulphate of lead is of no value for purposes of delivering an electric current, although, fortunately, sulphate may be oxidized by an electric current, hence its use in storage batteries. The point here is, sulphate of lead is the compound that is most to be feared in lead batteries because it is the compound that is always being formed, due to the action of the ever-present electrolyte. Surely there is no defect in the reasoning which makes men express a preference for the new styles of torpedo bodies now to be had from every maker of gas cars.—E. H.

Electric Lighting

Illustrating the Hartman System of Electric Lighting Furnishing Current for the Horn

IN recent times the idea of electric lighting in connection with gasoline types of automobiles has gained converts and the Hartman Electric Manufacturing Company, of Mansfield, Ohio, has placed upon the market a relatively inexpensive system for this purpose, comprising a six-volt dynamo, as illustrated in Fig. 1, including a regulator, as shown in Fig. 2. The dynamo is of the enclosed type, weighing 24 pounds, and the regulator is of substantial design, and so arranged as to be mounted on

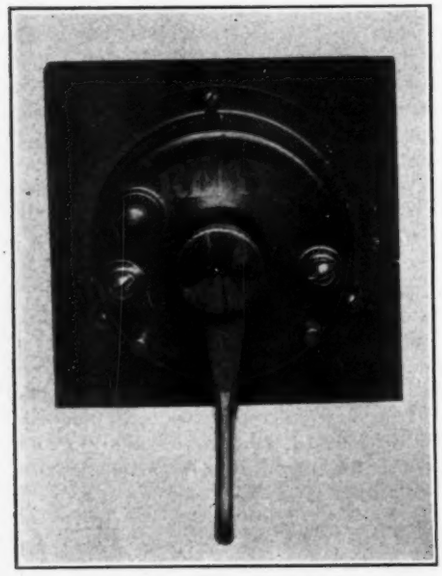


Fig. 2—Is the Remy type-B switch designed for hand key or kick pedal

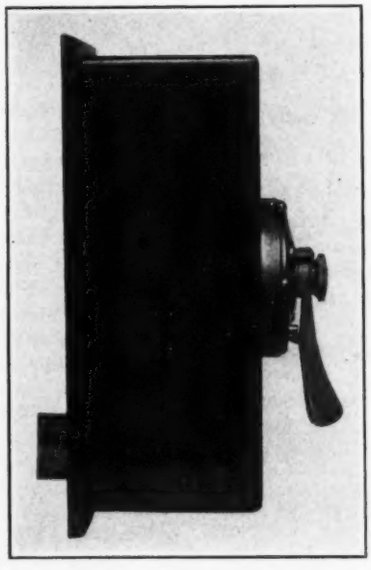


Fig. 1—Shows a type of switch which is furnished for either hand key or with a kick pedal

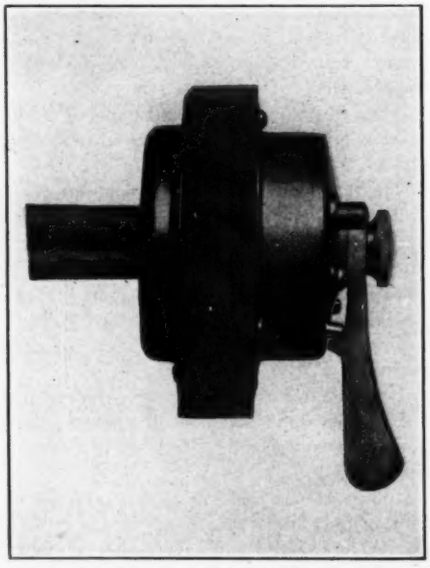


Fig. 3—Is a switch designed with a kick pedal only

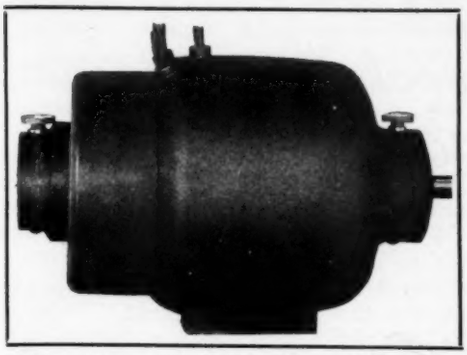


Fig. 1—Dynamo for lighting an automobile and other work

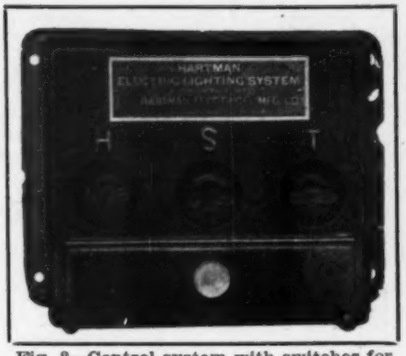


Fig. 2—Control system with switches for each circuit

the dash. With the regulator are included three switches, one of which controls the headlight, the second operates the side lights and the third takes care of the tail light. A socket for a trouble lamp is also provided, and a battery for absorbing the surplus energy is included in the system, which battery serves as an auxiliary battery for ignition purposes. As this system works when the car is at rest, or going below 10 miles per hour, the dynamo is automatically switched out, and the current is supplied by the battery, but when the speed of the car is above 10 miles per hour, the dynamo is thrown into action, carries the load, and any surplus resulting is absorbed by the battery. The system is entirely automatic, requiring no attention beyond the occasional oiling of the bearings of the dynamo. The function of the regulating device is to maintain the dynamo voltage constant under conditions of varying speed. Tests have shown that the voltage varies but slightly under speed changes ranging from 1,200 revolutions per minute of the dynamo up to the maximum in service. The battery floats on the circuit, and is therefore protected against overcharging, but it is so situated electrically that when it is below the charged state its receptive condition invites current from the dynamo. The details of the system are worked out to a fitting limit; a turn-down feature is provided in connection with the headlight switch, which enables the driver to kill the glare of the headlights when passing through congested districts and to turn the lights on in full force when the road condition warrants doing so. All circuits are fused so that trouble on one branch is not communicated to the remaining branches, and a separate circuit is provided for the ignition system. Full instructions are furnished with each equipment, and if purchasers so desire the company will supply fittings so that acetylene lighting equipment may be changed over to electric. These facilities are also available for the electrical equipment of oil lamps.

Tires and Winter Driving—There always seem to be drawbacks in the tire problem, and danger to this most vulnerable part of the automobile is always present. In Summer heat has a detrimental effect due to expansion. In Winter there comes the question of moisture due to rain and snow. A tire properly inflated that would pass over a sharp stone in Summer on a dry road without damage, if driven over the same stone in Winter on a wet or snowy road would probably cut, as rubber cuts very easily when wet. A road containing loose stones should always be taken slowly and with caution; if the patch is a short one, sufficient momentum should be attained before striking them to allow the car to roll over with the clutch out: but if the stretch is long, slow down beforehand.

1910 Edison Storage Battery

FINAL INSTALLMENT—DEALING WITH WALTER E. HOLLAND'S PAPER AS PRESENTED BEFORE THE TWENTY-SIXTH ANNUAL MEETING OF THE ASSOCIATION OF EDISON ILLUMINATING COMPANIES, HELD AT FRONTENAC, THOUSAND ISLANDS, N. Y., SEPTEMBER 6, 7 AND 8, 1910

CONTINUING the explanation of the diagrams accompanying this article, Fig. 26 is an interesting curve showing the alacrity with which the Edison cell adjusts its voltage to sudden changes of discharge rate; and showing also how nearly the voltage at different rates corresponds to that of constant-current discharges at each rate. The slight disagreement between these voltage values is accounted for by variations of internal resistance due to temperature differences. The dropping off at the highest rate toward the end of the varied-rate discharge seems to indicate that it is the increased heating alone which causes full capacity to be given at the same high rate of constant current.

The Edison cell thrives on short-current discharges. Fig. 29 gives the current curves of nine consecutive short-circuit discharges of an "A4" cell, which show an actual betterment of the cell by such treatment. Nine short circuits were given, in this instance, but the betterment ceased after the fourth run. This betterment has been found to be due to the fact that high-rate discharges improve the working conditions of the iron electrode, giving the cell stronger voltage. The improvement is hardly great enough to show on a normal-rate discharge, but becomes very evident at high rates, as shown in Fig. 29.

The length of time which the new type of Edison battery will continue to have a useful capacity must remain a conjecture, sufficient time not having yet elapsed since its inception to ascertain this by actual service tests. Life tests have been made in the laboratory, however, under conditions designed to accelerate deterioration; and by comparison and inference some sort of an

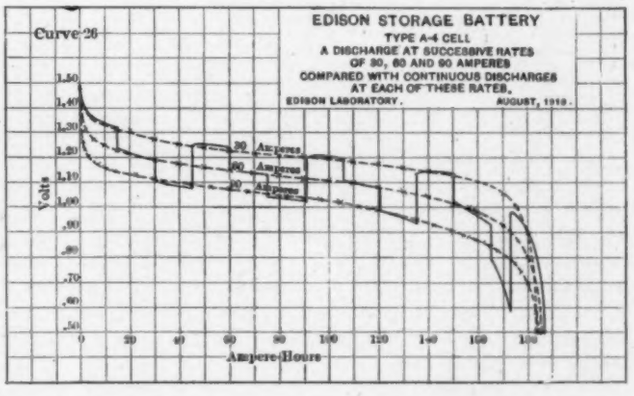


Fig. 26—A discharge at successive rates of 30, 60 and 90 amperes

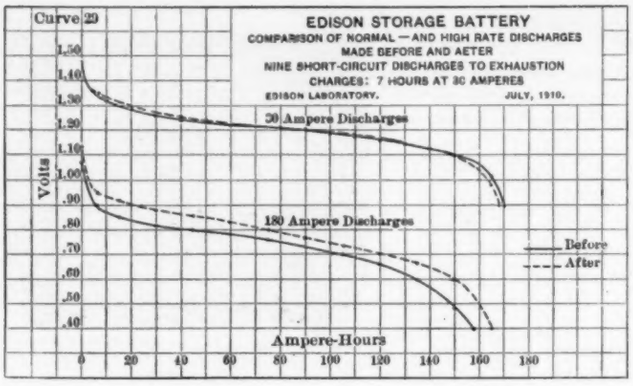


Fig. 29—Comparison of normal and high-rate discharges under different conditions

estimate can be formed from the results of these experiments.

To get life results more quickly use is made of two principles, one—mentioned previously under "Normal Ratings"—that high-temperature working shortens life; the other, that discharging to zero voltage, if practiced continually, has a similar effect.

All ideas as to improvement of the storage battery are first tried out in miniature cells having the single iron pocket and single nickel tube (1-24 and 1-30 parts, respectively, of regular plates) as electrode units. These experimental cells are just like the commercial cells in mechanical construction and give comparative results at proportional rates. A relatively quick life-test is obtained by maintaining such cells at a temperature of 130 degrees Fahrenheit during both charge and discharge, and carrying every discharge to zero voltage. After every 50 such "hot runs" each group of cells is allowed to cool down and is then tested at normal temperature. It is certain that this "killing test" is at least three and perhaps five times as severe as the conditions of commercial service; that is, 50 hot runs would be equivalent in effect to 150 to 250 runs in practice. Nevertheless, miniature regular cells will increase in capacity during 150 to 200 hot runs, and at the end of 500 hot runs will usually have better than original capacity. In some cases after 1,000 hot runs, cells had lost only 20 per cent. of their original capacity.

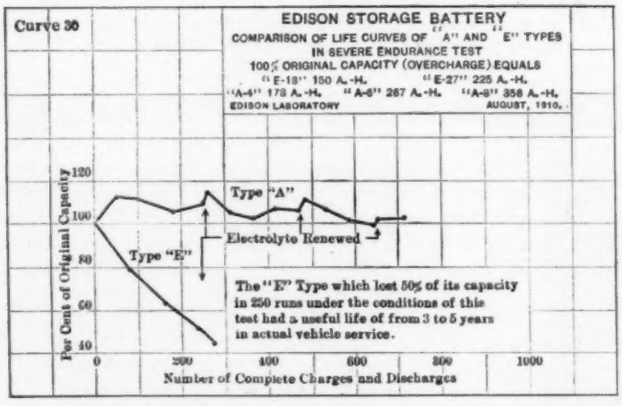


Fig. 30—Comparison of life curves of "A" and "E" types of cells

Life tests of many "A4" cells are also made, but at somewhat lower temperatures, as it is desired to have the conditions approach a little nearer the normal. In this case the temperature averages only 105 to 110 degrees Fahrenheit, but every discharge is carried to zero voltage, each cell then being short-circuited some minutes to ensure its complete discharge. The severity of this test as compared to service conditions can be judged from data obtained on the "E" type of Edison cell, some batteries of which were put in commercial operation six years ago. Curve "E" of Fig. 30 shows that this old type lost 50 per cent. capacity in 250 runs under the conditions of this test, and yet in actual vehicle service it had a useful life of three to five years. Curve "A" of Fig. 30 is the life result to date of the "A" type under the same adverse conditions. The inconstancy of the output in this case comes principally from differences of temperature, as the tests were made in a top-story room whose temperature varied considerably, depending upon outside conditions.

Two years ago the first regularly manufactured "A" type battery ("A6" cells) was installed in a demonstration wagon of one of the vehicle companies. After a few months of this service, during which several long test runs were made, the wagon was sold to a New York dry goods house, where it is still in operation. In July just past three cells were taken at random from this battery for test after having covered 17,000 miles. The results of the test are given in Fig. 31, which shows that these old cells, formed up under commercial service conditions, are actually better in overcharge capacity, in output on normal charge and in efficiency than the average of cells formed up under laboratory conditions; and that the watt-hour output given on normal charge is now, after 17,000 miles, 16 per cent. above the rated watt-hour

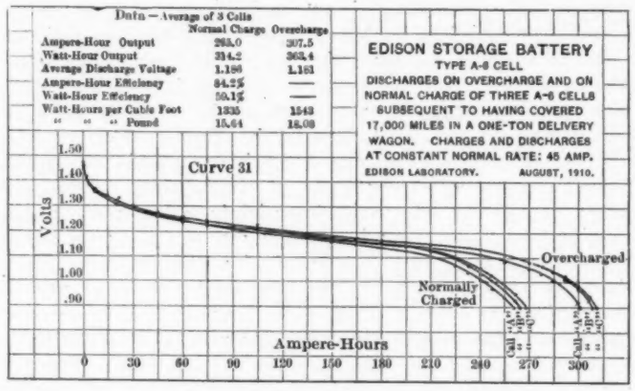


Fig. 31—Discharges on overcharges subsequent to having covered 1,700 miles in service

output, while the maximum output exceeds the rating by 34 per cent. In the light of such a performance who can set a limit to the life of the new Edison battery?

Proposed Electric Vehicle

An Admirer of Electric Vehicles Makes Valuable Suggestions

IMPOSING upon your good nature I desire to generously disagree with those who think that electric vehicles must ever have the taint of the horse and be so designed that the users will ever have to see all style and convenience pass them by, leaving a whiff of the odor of half-burned gasoline. Why is it that electric vehicles are so far behind the times? Why not make them just as gasoline automobiles are designed? If it is convenient to sit in a low seat in a gas car, what makes it inconvenient to have the same advantageous seat in an electric? If the center of gravity should be low in a gas car, why should it not be low in an electric? If the wheelbase must be long on a gas car, why should it not be long on an electric? If the wheels should be of large diameter on a gas car, why should they not be of the same large diameter on an electric? What is the fad that keeps the electric vehicle in the class of the modes of yesterday, leaving every admirer of this splendid device of transportation in the position of the ass who starved to death between two bulging haystacks? Who are the sleepers? Must they ever be with us? What is the answer? Please do not consign this communication to the waste-basket on the ground that the writer is a kicker. In all fairness to five electric vehicles that I have owned, not one of them compared favorably in style of design to any one of a dozen gas cars that can be made for not far from $1,000, but the electrics cost more.—E. H.

Operation and Care

LOOK AFTER THE LUBRICATING OF THE SMALL BEARINGS; TIGHTEN UP THE CLAMPING AND HOLDING BOLTS; LECTURES; LETTERS; QUESTIONS; TIRE-REPAIR; A VARIETY OF SHORT STORIES

OPERATING an automobile without paying some attention to the details and giving them some care is like making a hole in the gasoline tank and expecting that the fuel will remain in. The cost of maintenance of an automobile will be enormously increased unless the little things are looked after, and there is a good chance also of an accident. A long story, relating the nature of the acts that will produce good results, generally ends in confusion, but, confining the lesson, so to say, to some one phase of the whole instead of generalizing may have advantages. The illustration of a Matheson car here given, with the same raised up to permit of seeing the underparts, gives rise to an opportunity to letter the parts that are to be considered.

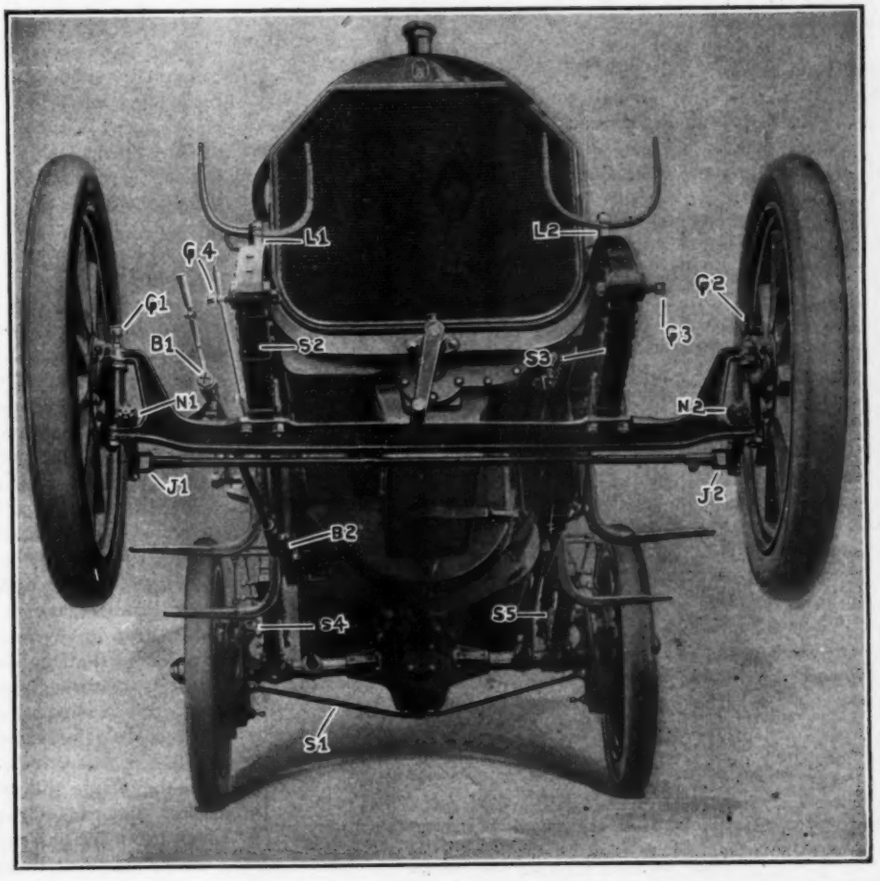
Questions of Lubrication.—Grease is fed to the small bearings by means of cups; it rarely ever happens that the cups are examined by automobilists to see if they are properly filled, or if the grease is in a good state of preservation. Referring to the illustration the grease cups G1 and G2 of the knuckle bearings should be given the best of attention, and the cups G3 and G4 of the springs, both front and back, should be kept filled. All other grease cups should be examined.

Steering Gear Bearings.—Keeping the automobile on the road is a matter of maintaining the steering gear in good order. The bearings and joints J1 and J2, also the ball-and-socket joints B1 and B2, should be looked after with the greatest regularity. Then, there are the nuts N1 and N2, in particular, not forgetting that all the other nuts on bolts and studs in connection with the steering equipment should be kept tight and locked. The springs will do good work if they are looked after; pry up the plates of the springs S2, S3, S4, and S5, squirt in some lubricating oil or smear grease over the surfaces, and let the plates spring back into place; do this every month. Lamps cost money; why not keep the brackets securely in place? The clamping bolts L1 and L2 should be looked after. When the rear axle sags the tires are abused. Why not look after the stay S1?

Take a car as it is here illustrated. It is made for absolutely silent performance; this silence is only possible if all the parts are suitably designed, and so made that all the relating members fit at the joints and so work in with each other that there is no lack of "design-harmony." In the meantime, let us call to mind that if it is desired to reduce the size of a part for any purpose, the most common practice in the shop is to set it up in centers in a grinding machine; this grinding is done so rapidly that it pays handsomely to resort to it rather than to use a cutting tool. Now, when the automobile is put into service, the first thing that the owner does is to set it up in centers in Nature's grinding machine, and, knowing full well that "dry grinding" is the most efficacious, or destructive, as the case may be, oil is scrupulously shunned and the grinding process makes terrific inroads on all the measures for silence that it costs so much.

Sand, as it drifts up from the top of the road, sifts in through the crevices however small they may be, and it is this sand that Nature so abundantly furnishes as the abrasive substance for the autoist to use. Look at a watch-case; let it be ever so tight at the seams; even so, it is but a matter of a few weeks at best when enough dust to obscure the figures on the dial will pass in through the seams; if dust has the stealth to do this, what chance is there to make joints in automobiles so tight that sand-dust will not get in? If not wanted, the great defender is oil.

False and Fair Promise.—Referring to patents, Edison says, "Is it generally realized that no matter how flagrant the infringement nor how bare-faced and impudent the infringer, no federal court will grant an injunction *until the patent shall have been first litigated to final hearing and sustained?*" On the other hand, the language of the grant would lead an unsophisticated inventor to believe that he is entitled to protection for 17 years.



MATHESON CAR RAISED UP AT THE FRONT END TO SHOW THE UNDER SIDE AND THE PARTS TO BE LOOKED AFTER

Piston Deformation

Poor Compression Sometimes Due to Warping Pistons

WHEN the stroke of the motor is long in proportion to the length of the connecting rod, or when the angularity, so-called, is a maximum, the side pressure of the piston against the cylinder wall is relatively high, and this will be accentuated if the motor compression is high, so that in the absence of good designing there is the probability of a considerable warping of the piston, resulting in undue wear in the plane of the connecting rod, unless the warping is so pronounced that the buckling of the piston increases its diameter more than the amount of the clearance, in which event wear will take place in the plane at right angles to the throw of the connecting rod. Under such conditions it is only a matter of a short time when the cylinder will be worn to an elliptical conformation, when the piston rings will no longer be capable of maintaining a tight compression. Fortunately, there are not a great number of cases of this sort in automobile work; but, unfortunately, the most efficacious remedy lies in the purchase of a new motor.

Smoke Is a Nuisance.—It is said that visible smoke consists of solid carbon particles and solid or liquid hydrocarbon particles or tar vapors. Smoke emanations are signs of incomplete combustion, but it may be true that complete combustion is impossible, due in some instances to the methods employed, and in other cases to the qualities that reside in the fuel. Excess of oxygen, *i. e.*, more air, is the proper way to eliminate smoke.

Cantor Lectures on Motors

PROFESSOR W. WATSON, D.SC., F.R.S., DELIVERED A SERIES OF LECTURES ON THE GASOLINE MOTOR, OF WHICH THIS IS THE FOURTH INSTALLMENT—BY PERMISSION OF THE ROYAL SOCIETY OF ARTS

I SHALL not describe how the indicator can be used to study the ignition of the charge. It is a well-known fact that in many cases, when an engine is fitted with both coil and magneto ignition, the running of the engine and the power developed is better when the charge is fired with the magneto than when it is fired by the coil. This effect is generally considered to be due to the fact that the magneto gives a much hotter spark, due to the passage of a larger quantity of electricity, and it is supposed that when the charge is fired by such a hot spark the pressure developed is greater than is the case when a feeble spark is employed.

I have examined this question, and have found that when the inlet valve is in a pocket, and the sparking plug is in this pocket, then, so long as the timing of the spark due to the magneto or coil is the same, on no occasion have I obtained any indication of a difference in the pressure developed, or even in the rate at which the pressure rises, due to the nature of the spark which is employed to fire it. In the case of one four-cylinder engine, in which there was a marked increase in power on switching over from magneto to coil, by taking indicator diagrams from all four cylinders it was at once evident that the loss of power when using the coil was due to faulty timing. Thus, if the spark advance was adjusted to give correct timing for one cylinder, in one of the other cylinders the spark occurred too early, and in another too late. This effect was due to a badly designed commutator, and on replacing this by one designed in such a way that the timing was exactly the same for all the cylinders the engine gave as much power with the coil as with the magneto. The above remarks apply to engines having the spark plug in the inlet-valve pocket, so that, at the time of firing, the charge in the immediate neighborhood of the spark is almost free from admixture with exhaust gases left over from the preceding firing stroke.

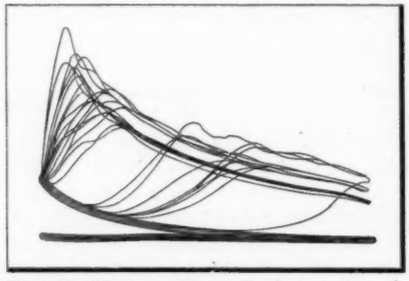


Fig. 17—Manograph card of a series of explosions that were delayed

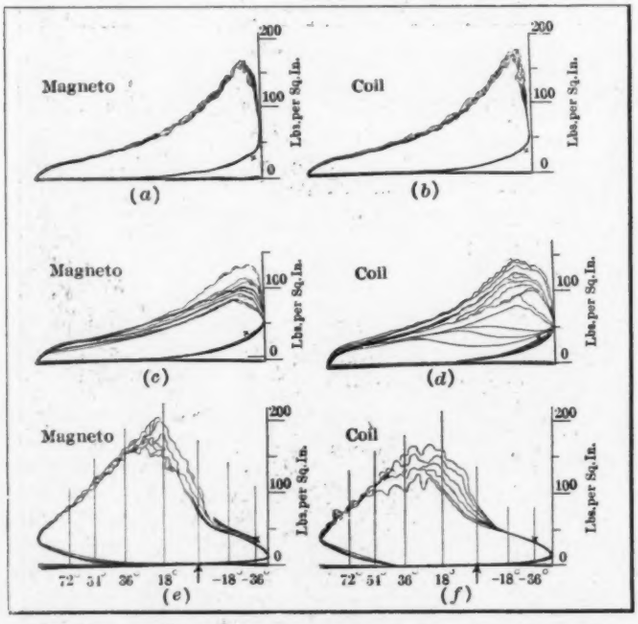


Fig. 16—Manograph cards, showing the results obtained with different methods of firing the charge

In the case of engines in which there are no pockets, or at any rate when the sparking plug is elsewhere than in the inlet-valve pocket, then a hot spark seems to be a distinct advantage, particularly when a weak mixture of petrol and air is employed.

This effect is shown in the indicator diagrams given in Fig. 16, for which a sparking plug was used in the combustion space on the opposite side to the pocket containing the valve. The upper two diagrams were obtained with a fairly strong mixture, and in this case there is not much difference observable. The two middle diagrams were obtained with a weak mixture, and it will be observed that the maximum pressure developed, and, in fact, the pressure throughout the working stroke, is much more regular for successive strokes in the case of the magneto than with the coil. In some cases, when using the coil, the burning of the charge is excessively slow, so that the pressure does not reach its maximum value till near the end of the stroke. The crosses marked alongside the compression stroke indicate the point at which the spark passed.

The two lowest diagrams also correspond to a weak mixture,

but the phase of the indicator has been altered, so that the spot of light is traveling from right to left at the maximum speed during the time the piston is at the top of the stroke. In this way it is possible to study the rate at which the pressure rises in the cylinder during the time the charge is actually burning. The vertical lines drawn across the diagrams are separated by equal intervals of time, the one marked with an arrow corresponding to the instant when the piston is at the top of the stroke. A photograph of the spark occurring in an auxiliary spark gap, placed in series with the sparking plug, is obtained on the negatives by placing the auxiliary spark gap alongside the hole in the diaphragm through which the light which falls upon the mirror of the indicator passes. It will be noticed that the magneto spark continues for a very much longer time than does the coil spark. Further, although the coil has a trembler, only one spark passes, since before the trembler has time to act a second time the battery circuit is broken at the commutator. Another point which is brought out strongly by these photographs is the large amplitude of the waves set up in the cylinder, or, at any rate, in the pipe connecting the indicator to the cylinder. This pipe joined the cylinder just alongside the spark plug, so that the charge was fired near the end of the tube, and under these conditions it is always found that the waves in the pipe are particularly well marked.

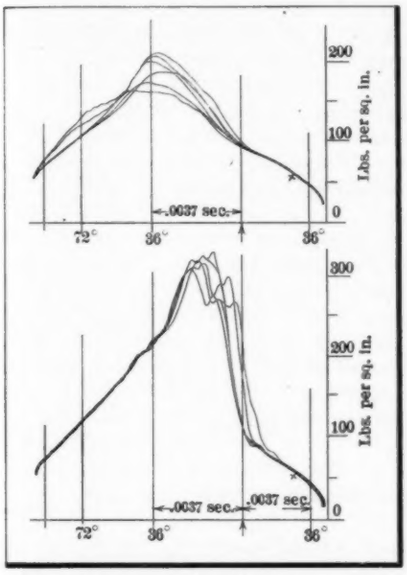


Fig. 19—Manograph cards showing the effect of varying the angle of advance and retard of the spark

When a trembler coil is employed it is important that the current in the primary shall not be less than a certain value, otherwise there will be a considerable delay, of varying amount, before the trembler blade is attracted sufficiently to break the current and cause the passage of a spark. If the current is very much reduced, then the trembler may entirely fail to act, so that the primary current is only broken by the commutator. Thus the spark, in place of occurring very shortly after the primary circuit is completed at the commutator, as is the case when the current is sufficiently powerful to cause the trembler to act, occurs when the circuit is broken at the commutator and is thus much delayed. In Fig. 17 is shown the kind of diagrams obtained when a comparatively weak mixture is fired with a trembler coil, the current being so weak that the trembler sometimes acts and sometimes fails to act. The diagrams may be divided into two series; the first series correspond to the trembler acting, and although the timing of the spark varies considerably, yet the charge is fired reasonably early. In the other series, where the trembler failed to act, the time of firing is so late that the maximum pressure is in some cases only reached toward the end of the stroke.

Another subject which I have investigated by means of the indicator, is the question of the influence of the number of sparks used to fire the charge. As has already been pointed out, even with a rapid trembler only a single spark is obtained at each spark gap, and there is no doubt that if the charge is fired by the first spark, the passage of any subsequent sparks will have no influence on the pressure developed or the rate at which the charge burns. By using two spark plugs at different parts of the combustion space, however, the charge may be fired simultaneously in two places, and hence we should reasonably expect the charge to burn more rapidly, since the flame will not have so far to spread before the whole of the gas has been inflamed.

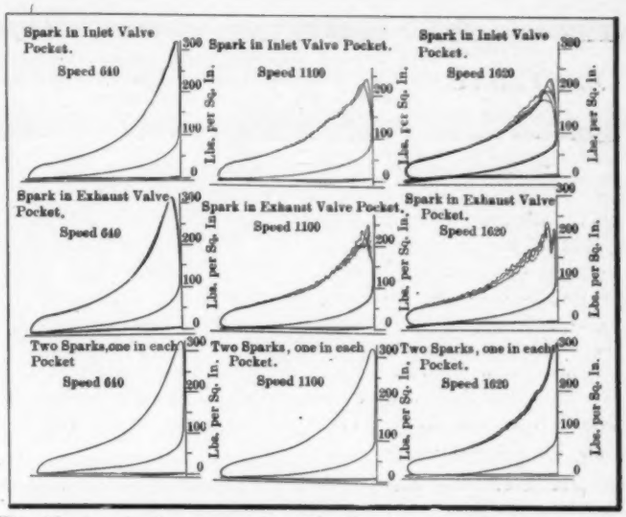


Fig. 18—A set of manograph cards showing the effect of igniting the spark at two points

The effect of varying the position of a single spark plug, as well as of using two sparks, is shown in Fig. 18.

It will be observed that at a speed of 640 revolutions per minute the diagram, and hence the power developed, is the same whether the spark takes place in the inlet-valve pocket, in the exhaust-valve pocket, or in both simultaneously. At a speed of 1,100 revolutions per minute, however, there is a distinct advantage in using two sparks, the indicated horsepower per cylinder rising from 4.6 horsepower per cylinder to 5.2 horsepower. At a speed of 1,600 revolutions per minute the effect is even more marked, the indicated horsepower rising from 6.5 to 7.3. This improvement at high speed is due to the increase in the rapidity with which the charge fires when the combustion is started at two points, as may be seen by a study of Fig. 19. The instant at which the spark passed is marked by a cross. As before the spaces between the vertical lines represent equal intervals of time (0.0037 second).

Graphite for Lubricating

Value of Oils and Greases Stimulated by Addition Thereof

WHEN bearing surfaces are examined under a powerful microscope the surface resembles a nutmeg grater. The high spots scraping over each other are the cause of friction. Flake graphite attaches itself to the high spots, fills in the low spots, and forms over the entire surface a thin, tough, veneer-like coating of marvelous smoothness, so that, instead of having actual metallic contact, there is graphite-to-graphite contact.

It has been truly said that wherever there is a mechanical movement flake graphite may be most satisfactorily used as a lubricant, and it is easy to see, with the above in mind, how the lubricating value of all oils and greases is stimulated by adding the correct proportions of pure flake lubricating graphite.

About the automobile there are many parts that are difficult to lubricate and which soon cause annoyance because of improper attention.

Wherever greases are used it is well to add from four to ten per cent. of flake graphite by weight, depending upon the service. It is better yet, however, to use graphite greases manufactured by some reliable company, that are especially prepared for the work in mind.

On a Curve

Safe Driving Depends Upon Speed, Radius of the Curve and the Center of Gravity of the Car, Including Some Local Considerations

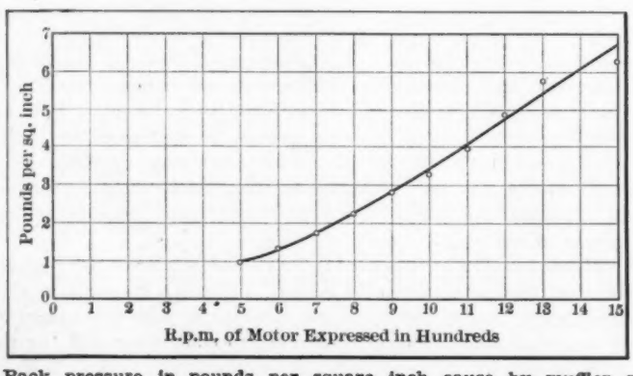
SINCE the wheelbase of automobiles is fixed by other considerations, as the conventions, safety in driving around curves depends upon the center of gravity of the automobile, radius of the curve, and the speed. There are local considerations, as the state of the road, condition of the surface, nature of the tread of the tires, and the chance that a puncture will occur just at a critical moment, and it may also transpire that the right-of-way will be pre-empted by some other automobile, or—who knows—a cow. From the speed-radius point of view, for an automobile with a low center of gravity, safety will depart when the speed exceeds that as given in the following table for the several radii:

Radius of curve, feet	Limit of speed, miles per hour
100	41.
150	50.2
200	58.
250	64.9
300	71.
400	82.
500	91.8

Back Pressure of Muffler

Some of the Power of the Motor Is Consumed in Back Pressure

ELIMINATING noise is at the cost of power of the motor, practically in every example of which exact knowledge is available, although there are types of mufflers that offend but slightly relative to those that are intended to dampen noise by the simple expedient of preventing the exhaust gas from coming out fast enough to get out of the way of the piston and the incoming mixture. It is a great misfortune that the silencing of noise is at the expense of power; but it is well-spent power at that, nerves being worth more than the cost of the power that is used up to save them. The curve as here charted shows how the back-pressure increases with the speed of the motor. Starting with a back pressure of one pound per square inch at 500 revolutions per minute, increasing to 6.3 pounds per square inch at 1,500 revolutions per minute of the crankshaft of the motor. It is scarcely to be supposed that the amount of the back-pressure will be the same in all makes of motors considering a given speed, nor is it true that all mufflers will offend to the same extent, but the fact remains that more or less back-pressure will have to be entertained as a rule. Should a muffler cut-out be used? Probably not—it is the source of much noise and it prejudices the public in favor of adverse automobile legislation. Nor is it likely that the muffler cut-out eliminates the back pressure, although it probably is true that it contributes to the easing up of the same. Of course the efficacy of a cut-out depends upon how it is made, and the manner of its installation.



Back pressure in pounds per square inch cause by muffler at different engine speeds

Compression Troubles

LOSS of compression means loss of power. The motor so suffering it is not in good order. The carbureter will also indicate that account of carbureter trouble from the purely carbureter point of a low depression in the region of the nozzle of the carbureter, and the lack of suction of the motor following loss of compression, that is

A TO Z OF THE CAUSES OF LOSS OF COMPRESSION

(a) Leaky gasket joint.
(b) Leaky inlet valve.
(c) Worn piston rings.
(d) Worn cylinder.
(e) Valve stems disformed.
(f) Leaky exhaust valves.
(g) Valve stems in tight guides.
(h) Valve stems gummed up.
(i) Valve seats pitted.
(j) Valve springs, temper gone.
(k) Valve lift adjustment changed.
(l) Crack in cylinder.
(m) Piston ring broken.
(n) Piston ring in tight slots.
(o) Piston rings, slots all in line.
(p) Piston rings gummed up.
(q) Cylinder head covers not tight.
(r) Crack in piston.
(s) Porous piston.
(t) Spark plugs not screwed in tight.
(u) Broken valve.
(v) Broken valve key.
(w) Broken valve spring.
(x) Overheated motor.
(y) Wrong valve setting.
(z) Cracked porcelain of plug.

Ensnaring Ads.

Which Fail by Being More Beautiful Than Straightforward

ADVERTISING is a science and an art—everybody says so—and withal quite crafty, too. Through the great charm of these versatile aspects, and perhaps for other reasons as well, the special ability for turning a plain business announcement into a joy forever is being assiduously cultivated and the adepts are every day introducing new methods, one more brilliant than the other, for capturing and holding the attention of the fickle public. In the absence of a suitable scale for measuring advertising achievement, it is unfortunately as yet impracticable to announce from day to day that a local, national or international record for advertising performances has been broken, but this may come as soon as advertising shall have been proclaimed a sport and a pastime, as well as a science and an art. A new mark, if not a record, was made recently, however, when a bunch of business men with goods to sell were induced to be satisfied with the reflected glory of booming the name of the artist who had chiseled their announcements into words. Under the head, "Do it once, but don't do it again," the trick marked a passing emergency rather than a threatening innovation, but it suggests the query if the advertising beautiful is, after all, the business bringer.

There must be a large percentage of intrinsic value in advertising, or it would be dead and damned long ago.

AN ANALYSIS OF THE DIFFICULTIES THAT LEAD TO LOSS OF COMPRESSION IN MOTORS, WITH A BRIEF WAY OF FINDING THE REMEDY

will perform in a "lazy" manner and the ignition system will act as if the mixture is not efficacious; this will be so, but it will not be on of view. True, the carburetion will be bad, but this will be on account this condition of the depression will be brought about on account of to say, failure of the piston to pull a proper vacuum.

A TO Z OF THE PROPER REMEDIES TO APPLY

(a) If worn, fit new one and draw up tight.
(b) Take out and clean if worn; grind in.
(c) Have new ones made to size of cylinders.
(d) No cure except lapping and fitting new pistons.
(e) Best to fit new valve.
(f) Clean off oil and carbon.
(g) Ease the valve stems in a lathe.
(h) Take out valves and clean in kerosene.
(i) Grind in with fine emery.
(j) Fit new springs equal in strength.
(k) Probably does not close early enough; close down.
(l) This can sometimes be repaired by welding.
(m) Take out at once and replace with a new one.
(n) Ease rings, not slots.
(o) If this happens often fit step rings or pin.
(p) Sometimes kerosene injected will cure it.
(q) Take off, clean face joints; if gasket, fit new one.
(r) Fit new piston; not worth welding.
(s) Slightly turned and a plate fitted might cure.
(t) Screw tight; new gaskets are cheap.
(u) Fit new one; old ones can sometimes be repaired.
(v) Fit new one; anything will do to get home.
(w) Seldom happens; can be packed temporarily.
(x) Cool off with little kerosene.
(y) Retime motor.
(z) Fit new porcelain or new plug.

New Rubber Forests

May End Scarcity by Developing a Brazilian Virgin Field

FURTHER declines in the raw rubber market are expected by the American trade, and their effect upon the tire market can be conjectured. According to those most closely in touch with the situation, there is no likelihood of large, immediate purchases in the open market as stocks on hand are sufficient for their purposes for the time being.

The supply of raw rubber for the spring trade has been picked up in small lots and by adroit buying, and at the present stage the demand is somewhat slackened. But the other factor in the situation, that of the supply, is what is having more weight with the tire men. For several weeks the price level of rubber has been steady with a downward tendency, but the fact was noted that any material buying orders stiffened the backs of holders and that the floating supply of the product was not large. This alone would indicate that the manipulated conditions still exist in the market, but the tire men have been pleased to hear reports from the Brazilian field that recent explorations have developed the fact that the practically unknown tropical jungles back from the Amazon River contain millions of acres of virgin rubber forests.

"An exchange of thought contains valuable suggestion to the listener—the tongue is the enemy of the listener."

Specific Gravity of Fuel

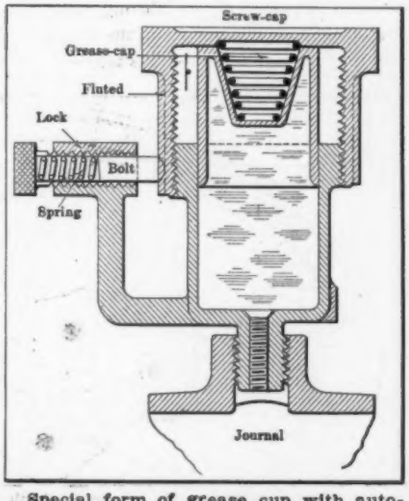
Gasoline Is Fractionally Distilled of Crude Oil Holding Several Fractions

ATTEMPTING to determine the quality of automobile gasoline by sticking a hydrometer into a measure of it and observing the specific gravity of the liquid as a whole is a useless undertaking. The specific gravity may be taken without difficulty, but it will not be a measure of either the fuel value of the liquid (by indirect indication) or of the volatility of the same, due to the fact that the distiller, if he takes five fractions, can so balance the lighter with the heavier fractions as to bring about a given specific gravity without using that measure of the middle fractions that will produce the most desirable grade of automobile gasoline. No method of indicating quality should be used in determining the same, if the compounder of the mixture can by jugglery produce the apparent result without having to deliver the goods. If hexane, for instance, is the best fractional distillate then the method to employ in the determination of the quality of the gasoline is that method which will show hexane, if it is present, or the absence of hexane, if it is left out. It should be understood by automobilists that automobile gasoline is not gasoline proper; there may not be any gasoline in the mixture that he buys for gasoline. The probabilities are that automobile gasoline is a compound of the three benzine distillates, with enough hexane to permit of starting the motor, it being the more volatile fraction. To whatever extent it is possible to make a composite pure, thus eliminating by-products in the process of manufacture, it is a good thing; the price is affected favorably.

Special Grease Cup

So Designed as to Press the Grease Down

LUBRICATION by means of grease depends for its efficacy (a) upon the quality of the grease, and (b) upon the use of a well-designed grease cup. The illustration here shown is of a special form of grease cup that offers the advantage of holding enough grease to make it worth while using a cup, and in addition to this necessity, it is so made that by means of a spring which presses against the supplementary cap, the grease is gently pressed down all the time. In addition to this spring the cap proper may be screwed down from time to time, thus adding to the pressure exerted by the spring. A lock-bolt is located at a point of vantage, so contrived that it does not have to be undone when it is desired to screw down on the cap, but it does afford absolute security, preventing the cap from screwing off or down. True, this cup is rather formidable, but it is less so than the bill that comes to the automobilist who relies upon sand as a lubricant for the multiplicity of bearings that designers have not, as yet, learned to do without; until they do, let us use grease, which to do, demands a place in which to store it, and a way by which it will be forced into the journal to be lubricated. Buy good lubricating material, disregarding price,



Special form of grease cup with automatic means of pressing the grease in, in addition to the hand-pressure cap

Going Up Grade

What Happens When an Automobile Is Going Up Hill

ON a grade a body is free to move only on the inclined plane. Its weight acts downward. This downward force may be resolved into the components N, normal to the plane, and R, in line with it. The component R retards the car. Since $R : W :: Q : L$, $R = \frac{Q}{L} W$, or the resistance due to a grade is equal, in pounds, to the weight of the car multiplied by the proportion of rise in the grade: Roughly, 20 pounds per ton of car weight per 1 per cent. of grade. For the car in question, which, when loaded, weighs, say, 3,800 pounds, the resistance due to grade only, on a 1 per cent. grade, is 38 pounds; on a 4 per cent. grade, 152 pounds, and so on. A car must have tractive force sufficient to overcome the resistance of the steepest grade it is likely to encounter, otherwise no amount of horsepower will make it mount the hill. This is to be accomplished by using large cylinders, or more cylinders, small wheels, or a high gear ratio, or by a combination of these methods; and, after all, the operating conditions at the motor will affect the tractive force more than any other factor.

The highest tractive force is developed on the first gear, and this gear must, therefore, be used on the worst grades. This means a comparatively slow speed, since at 10 or 12 miles per hour the piston speed will have reached 1,000 feet per minute. It is desirable to use second or even third gear unless the grade is such as to stall the motor, and greater economy, of course, follows the use of the higher gear.

Viscosity Interferes

Varies with Temperature, Changes of Gasoline Altering the Flow of Same Through the Nozzle

BETWEEN Midsummer and January automobiling the temperature changes in round numbers 100 degrees Fahrenheit in the latitude of New York, and it is within the probabilities that this temperature change is fully 150 degrees Fahrenheit in northern Minnesota. This temperature change has no marked effect on the functioning of a motor *per se*, nor should it have any serious effect upon the lubrication, although it might interfere with efficacious work on the part of the water-cooling system, provided no attempt is made to utilize anti-freeze mixtures. The greatest difficulty in connection with temperature changes lies in the place where it is least expected. Gasoline, like molasses, becomes thick or thin, depending upon the temperature. Like molasses, gasoline flows through an orifice fast if it is thin, and slow if it is thick. When the weather becomes cold the gasoline, like molasses, flows sluggishly. In attempting to disregard this situation the average automobilist has a miserable time of it, and if he lacks in the qualities of a bulldog he will put his automobile away in the garage and nurse his grievance in silence; the other course is to consider natural laws, make the nozzle hole big enough for Winter work and enjoy life.

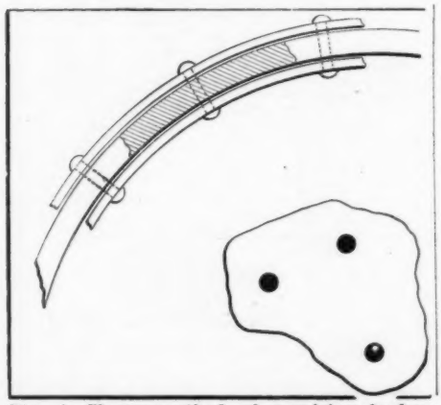


Fig. 1—Shows method of repairing broken aluminum base chamber

Letters from Subscribers

Loose Nuts Stopping Oil Feed

Editor THE AUTOMOBILE:

[2,423]—I have trouble with the lock nuts on my drip feed oiler shaking loose and the adjusting screw closing down and giving insufficient oil to the motor. I can see this in the daytime, but at night I fear that some time I shall have trouble through want of lubrication. What shall I do? R. KELLY.

Detroit, Mich.

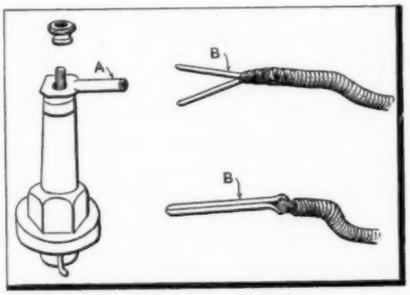


Fig. 2—Easily made terminal

Fit a lock nut to the existing nut (Fig. 5). A better way is to take a small piece of tube and cut it to about the right height as in Fig. 3, and this will prevent the adjusting screw falling below the proper level.

To Fit Terminal

Editor AUTOMOBILE:

[2,424]—How can I fit terminals to low-tension wire without soldering? I find that they shake loose if not soldered. INQUIRER.

Take a small piece of copper pipe, split it and hammer it flat; then drill a hole to the size required and screw it to the particular connection. A split pin that makes a tight fit in the pipe should then be used (Fig. 2); bind ends of loose wires with tape, first opening split pin slightly to make a better fit.

Inaccessible Gasoline Taps

Editor THE AUTOMOBILE:

[2,425]—On the last two cars I have had the gasoline tap is placed under the tank, which is located under the driver's seat, and it is necessary to take up boards every time I wish to turn the gasoline off. Can you suggest anything so that the supply can be cut off without this inconvenience? TIRED.

Newark, N. J.

We would suggest that you fit a rod through the frame as shown in Fig. 6 that will grip the tap handle, but which should point downwards when open. The reason for this is in case the vibration causes the handle to drop the gasoline flow will not stop.

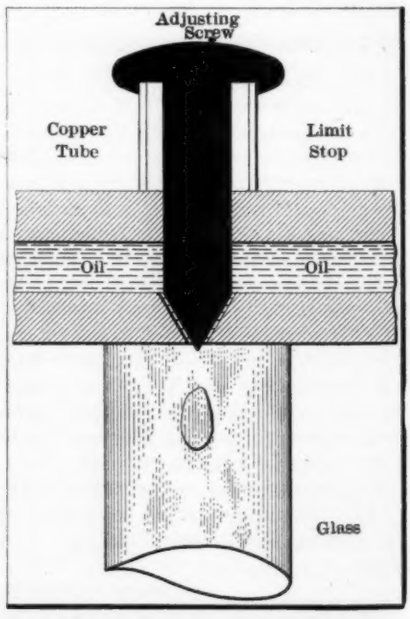


Fig. 3—Drip-feed oiler with limit stop

THIS DEPARTMENT IS DEVOTED TO THE ANSWERING OF LETTERS FROM SUBSCRIBERS ON ANY SUBJECT RELATED TO THE RUNNING OF AUTOMOBILES

Repairing Broken Base Chambers

Editor THE AUTOMOBILE:

[2,426]—I recently had the misfortune to break a piece out of the lower half of the base chamber of my motor. Could you tell me a way of having this repaired otherwise than by welding? F. R. E.

North Adams, Mass.

This is a question that it is difficult to answer without knowing **exactly what** part of the base-chamber is broken or how it was done. Lugs can be welded satisfactorily, that is to say, they are guaranteed by the repairers; but presuming that the part of the base that has met with an accident does not have to bear any strain, Fig. 1 shows a method that can be employed and can be relied upon to retain oil. There is no real necessity for the inside liner, but this can be fitted if there is room and the section a large one. The outside strip is made of copper and hammered to the shape of the part to which it is intended to apply it. The broken part is then riveted to the copper strip which is in turn riveted to the base chamber.

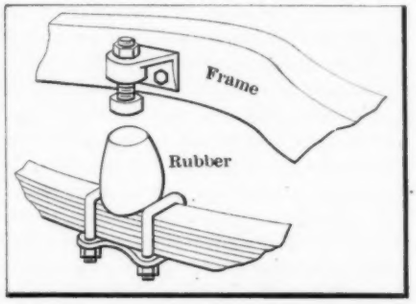


Fig. 4—Rubber buffer for upswept frames and 3-4 elliptic springs

A Buffer for Weak Springs

Editor THE AUTOMOBILE:

[2,427]—When the car I run is fully loaded the rear springs seem to deflect very much, and sometimes, in going over a bad piece of road or a railroad, there is a bumping noise at the rear of the car. Could you suggest any kind of buffer that will overcome this?

LIMOUSINE.

New York.

The method shown in Fig. 4 should be what you want. The metal point of contact of the buffer should be slightly larger than the rubber cushion. The buffer can be so adjusted that it will strike the rubber cushion as the spring comes up and thus deaden the impact.

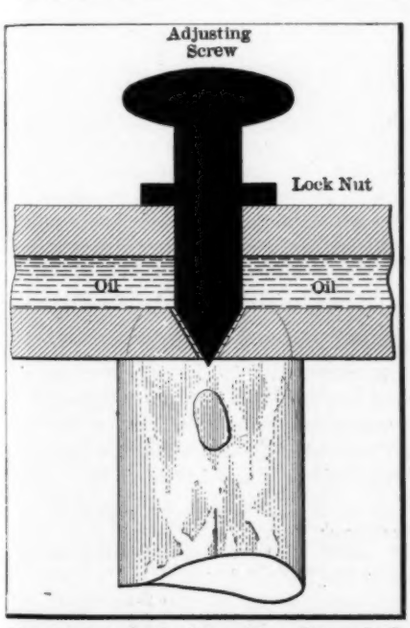


Fig. 5—Drip feed oiler with ordinary lock nut

Lubricating Advice

Noiseless Performance and Long Life Depend Upon Efficient Lubrication

JUST using a considerable quantity of lubricating oil ostensibly on the bearing surfaces is not the way to realize all there is in it. The man who counts his money carefully, making sure that the balance is correct, will be on the exact right road when he pursues precisely the same course in connection with the lubrication of the bearings of his automobile; the same care and precision are all that good judgment dictates. Below are some useful hints to be followed as nearly as the equipment of the various makes of automobiles will permit; good lubricating oil should be used, however.

(A) The resistance decreases with the thickness of the film.

(B) The resistance increases very materially with the viscosity of the lubricant.

(C) The point of nearest approach is approximately 90 degrees from the line of load.

(D) The points of maximum and minimum oil-film pressure are approximately at equal distances from the point of nearest approach.

(E) As the speed increases the points of maximum and minimum oil pressure get further and further apart, till at very great speeds they are in the line of load.

(F) As the speed increases the eccentricity of the oil film becomes less.

(G) The concentric position is the one of least resistance.

(H) Oil should be supplied at a point where the supply pressure is greater than the film pressure.

(I) The loading for a given speed must not exceed a certain limit at which the oil film is broken.

(J) This limit may be increased by lengthening the bearing, so increasing the cooling influence on the bearing.

(K) Oil grooves wrongly placed may destroy continuity of the film.

(L) A motion of pure rotation produces automatic maintenance of the film, provided the supply is adequate.

(M) The temperature varies throughout the bearing, the highest temperature being at the point where the film is thinnest.

Further, in the case of a reciprocating load we know that—

(N) A reciprocating load irrespective of rotation produces automatic lubrication.

(O) Heavier mean loads can be supported if the direction of load is reversed, because the lubricant is more vigorously sucked in, and the retardation of surfaces approaching one another normally increases very rapidly as the film becomes thinner.

Generally speaking, failure of lubrication is caused by rupture of the film due to:

(P) Inadequate supply of lubricant.

(Q) Reduction of the viscosity arising from excessive heating, either general or local.

(R) Badly placed oil grooves.

(S) Overloading.

(T) Grit.

(U) Impurities, such as water, reducing the film-forming qualities of the oil.

(V) Take nothing for granted—plausibility is a danger; it frequently leads to bad results. Investigate, and when a method is proposed, if it pans out, use it.

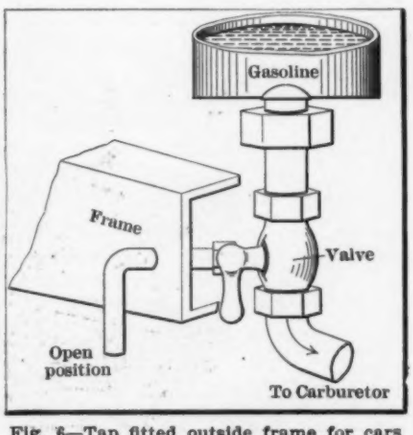


Fig. 6—Tap fitted outside frame for cars with gravity feed gasoline supply

Care and Repair of Tires

FOLLOWING up the line of thought as introduced under the head of "Imprint Methods of Testing" in THE AUTOMOBILE of November 10, it was decided to try out tires under two sets of conditions, *i. e.*, (a) to ascertain the area of tire contact under different conditions of pressure with the tires on the wheels with the car ready to use, not including passengers, and (b) rolling the car along the floor, permitting the rear wheel to intercept a "chock," the same being hewn down so as to present a face set at an angle of 60 degrees from the horizontal, the idea being to give the tire a good jolt, with a means available to show the imprint area, and compare it with the normal imprint as measured under the tire of the car standing still on the floor.

The pressures obtaining in the tire under the different conditions are stated for each print, and a study of the prints as given will at once lead to the conclusion that road obstructions have a marked effect upon the extent of deformation of pneumatic tires, introducing flexure to a degree that must have a large bearing upon the rate of deterioration, and with a view to measuring something of the deteriorating influence an attempt will be made to give an empirical formula, which while it cannot be regarded as absolutely accurate is far better than a disregard of the facts.

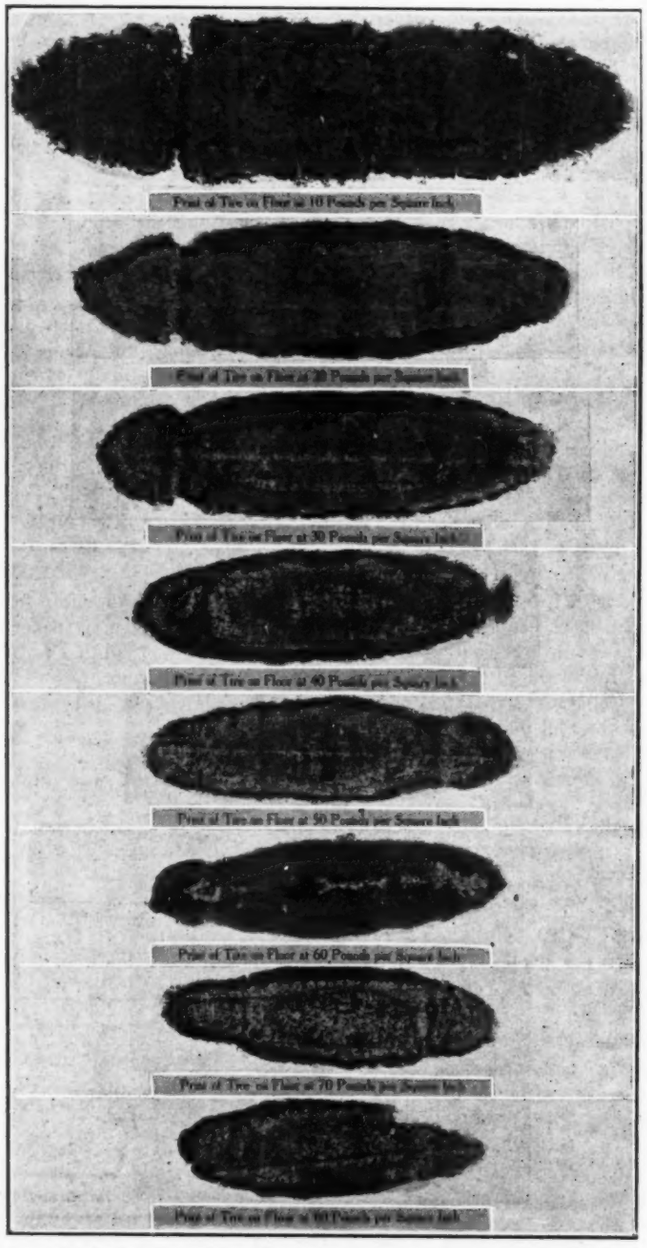


Fig. 1—Prints taken at various pressures with a 34 x 4-inch tire on the wheel, with the car standing still and resting on the floor

As a general proposition it will be possible to conclude that the tire which presents the least area of contact as shown by a print will last the longest. How much longer the life will be with the minimum area of contact must be left to conjecture to a considerable extent, but if the width of the print multiplied by its length is divided by the pressure of air in the tire at the time of making the print, the constant derived will be a rough indication of the difference in tire life. To be more accurate, find the area of the print and divide it by the pressure in the tire.

Referring to Figs. 1 and 2 of prints taken at the garage of the Overland Sales Co., 1599 Broadway, New York, for purposes of illustrating this article, the pressure in the tire under the several conditions is given in each case, care having been taken to start with the pressure as low as 10 pounds and raise the same by even increments to 80 pounds inclusive. It is generally claimed that 90 pounds per square inch is not too high for tires as large as 34 x 4 inches, which was the size used in this test, but an examination of the tire prints discloses no very sound reason for wishing to raise the pressure above 80 pounds per square inch. Fig. 1 shows the imprint of the tire under pressure between 10 and 80 pounds inclusive by 10-pound increments, with the car resting on the floor; in other words, it shows the amount of tire contact under static conditions. The tire contact around the periphery under the different conditions of pressure was as follows:

PERIPHERAL CONTACT OF A 34 X 4-INCH TIRE

Pressure per square inch	Peripheral contact in inches
10	11 1-2
20	9 3-8
30	8 1-2
40	7 1-4
50	7
60	6 5-8
70	6 1-8
80	5 7-8

The cross-sectional contact under the same conditions follows:

CROSS-SECTIONAL CONTACT OF A 34 X 4-INCH TIRE

Pressure per square inch	Cross-sectional contact in inches
10	3
20	2 5-8
30	2 1-2
40	2 1-8
50	2
60	1 7-8
70	1 3-4
80	1 3-4

Between 70 and 80 pounds per square inch the cross-sectional contact was substantially the same, but the peripheral contact changes noticeably, showing that there was a substantial gain by having the pressure at 80 pounds as compared with 70 pounds, if it is true that reducing the area of contact is beneficial. There must be a point beyond which reducing the area of contact ceases to be desirable, but this point has to do with the easy riding qualities of the automobile, and the probabilities are that easy riding is at the expense of tire life. Referring to Fig. 2, two conditions are depicted in the illustrations of imprints marked (A). The results were obtained by pushing the automobile for a distance of about 6 feet, bringing the rear 34 x 4-inch tire up against a vertical post, thus striking a blow, and bringing the car to rest by impact. In order to compare the performance of the tire with the normal contact under static conditions reference may be had to the table:

PERIPHERAL CONTACT OF A 34 X 4-INCH TIRE AGAINST A VERTICAL POST

Pressure per square inch	Peripheral contact in inches
10	12
20	11 1-2
30	10 3-4
40	9 3-4
50	8 5-8
60	7 1-2
70	7 1-4
80	6 1-2

SHOWING RESULTS OBTAINED BY IMPRINT METHODS ON A 34 X 4-INCH TIRE UNDER STATIC CONDITIONS AND AS THE RESULT OF IMPACT

The cross-sectional contact of the same tire as shown when the car was stopped by bringing the tire up against a vertical post was as follows:

CROSS-SECTIONAL CONTACT OF THE TIRE AGAINST A VERTICAL POST

Pressure per square inch	Cross-sectional contact in inches
	3 1-2
20	3 3-8
30	3 1-4
40	3
50	2 3-4
60	2 3-8
70	2
80	2

In this case it is evident that the difference between 70 and 80 pounds per square inch, from the squashing point of view, is nominal. At the very low pressures, however, the measurements indicate very little, owing to the sensitiveness of the tire and inability to accurately fix the value of the impact blow. The illustrations marked (B) to the right in Fig. 2 show the result obtained by pushing the automobile along the floor and arresting motion by bringing the tire up against a chock cut to an angle of 60 degrees for a height of 9 1-2 inches. The point AB represents the top of the chock, and a sharp line indicates the point where the tire rolled over onto the top of the chock in each case. Necessarily the tire squashed down the most just where it turned over the edge of the chock. The cross-section contact of the tire increased as the tire rolled up on the chock, and the maximum measurements under the different conditions of pressure are given as follows:

CROSS-SECTIONAL CONTACT OF THE TIRE WITH A 60-DEGREE CHOCK

Pressure per square inch	Cross-sectional contact in inches
10	6
20	5 1-2
30	5
40	4 1-2
50	4
60	3 3-4
70	3 1-2
80	3 1-4

No attempt will be made at this time to interpret these tire prints beyond pointing out how increasing pressure increases protection and how road obstructions concentrate the work on a small area of the tire, thus making it self-evidently desirable on the part of the autoist to steer clear of large road obstructions, particularly if the automobile is going at a high rate of speed. The impact prints given here were made when the car is rolled along the floor by two men with barely a 6-foot start. The strain on the tire would be increased enormously were the speed of the car higher.

Who Buys Autos?

Sentiment and Character Seem To Be Factors As Well As Money

IT puzzles French manufacturers to find some good reason accounting for the fact that England has twice as many automobiles in daily use as their own country despite the position as pioneers and teachers which the French held for a number of years. The distribution of wealth does not explain the situation, as there is a large wealthy middle class in both countries. Perhaps, it is said, it is because the Englishman employs his automobile for both pleasure and business and makes of it a paying investment which he can well afford to keep in good order, while the Frenchman uses it for pleasure only and gets little direct pecuniary return. But this explanation is not hailed as perfectly satisfactory. The question remains of interest even to the manufacturers of other countries, though it might be dismissed as simply another demonstration in favor of the almost established contention that the French prefer constitutionally to get rich by economy and the English by push and expenditure. Time is money in Great Britain, while in France it is an opportunity for a new sensation, and the automobile is not exactly new any more. Its general idea is settled, and the French love to prove out new general ideas for the benefit of the rest of the world, in all things, except money, capital and investment. With British capital preponderating in most of the large automobile manufacturing companies operating under French names on French soil and with French workmen, it is not really to be marveled at that the average *citoyen* cares little about swelling their dividends—and is there not at this point a reminder to the American manufacturer who consents to merge the individuality of his company in a larger capitalization, in whose ups and downs the American citizen takes only a secondary and impersonal interest?

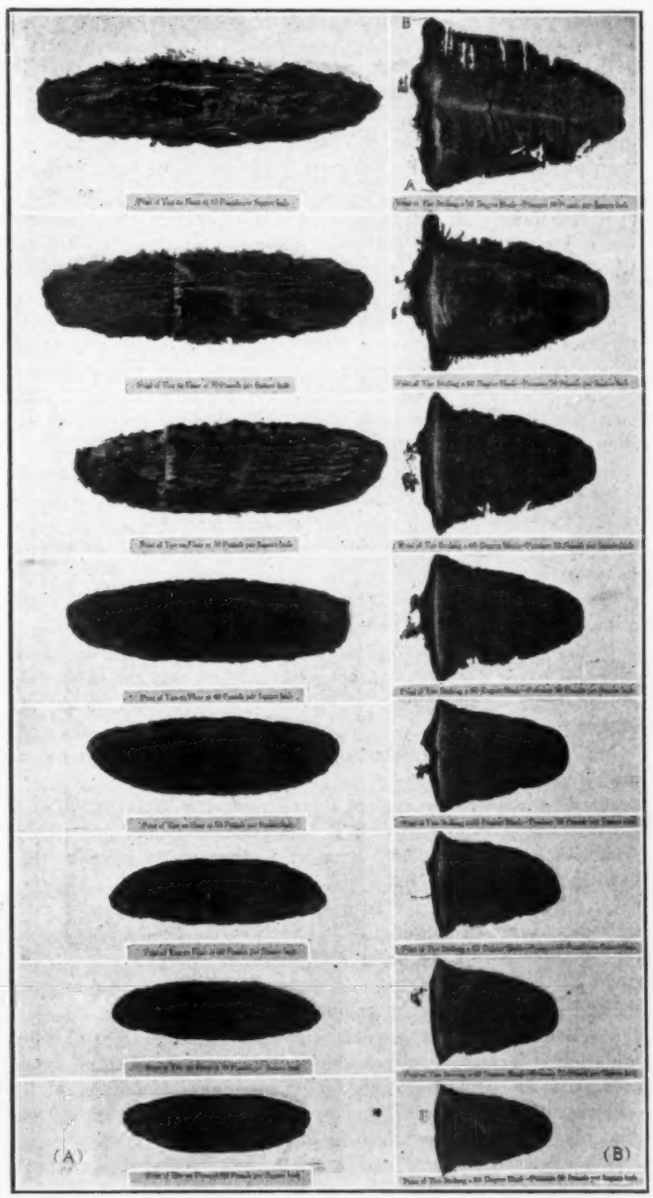


Fig. 2—Prints taken from a 34 x 4-inch tire (A) by bringing the car to rest by contacting the tire against a vertical post (B) by rolling the car along the floor and up against a 60-degree chock until the tire passed over and on top of the chock, the elevation being 9 1-2 inches

Questions That Arise

SOME OF THOSE THAT COME UP IN EVERY-DAY AUTOMOBILING ARE ANSWERED BY THE MATTER WHICH IS BEING PREPARED BY FOREST R. JONES IN THE NEW EDITION OF THE "AUTOMOBILE CATECHISM" THAT WILL SOON GO TO PRESS

[273]—How can you make an emergency repair of a broken leaf-spring—one of those which carry the body of the car?

A.—Place a bar of steel along the spring and fasten the bar and spring together with U-shaped clips, somewhat like those commonly used for fastening the spring to the axle. Two or more clips must be used. The elastic action of the spring is of course lost to a considerable extent, or even wholly.

A rubber bumper or a block of wood will hold the body up if the spring will still keep the axle in position otherwise.

[274]—What is a convenient way of removing a valve spring of the coiled form?

A.—A bar of steel, thin and forked at one end to straddle the valve stem and press against the washer at the end of the spring is a suitable tool. Put it under the spring, or washer, and compress the spring by lifting on the bar. The key can then generally be readily removed from the valve stem so as to leave the valve free to be lifted out and the spring removed.

If the forked bar can be used as a lever resting on a fulcrum, the operation is more easily performed. Some such bars are provided with a chain having a hook to catch on the head of the motor cylinder.

Some of the earlier forms of springs have the end stuck through a hole in the valve stem. No key is used with them. The forked bar can be caught in the spring just above the end of the latter and lifted to relieve the pressure of the spring against the hole in the valve stem. The end of the spring can then be forced out of the hole with more or less difficulty.

[275]—When putting a gasket or packing in a pipe-connection, what precautions must be taken?

A.—That the packing does not squeeze into the pipe so as to stop the passage. This is most apt to occur when candlewick packing is used.

Sheet packing between metal parts should be as thin as will allow it to adjust itself to the irregulations of the surfaces.

If the joint is to be opened frequently, coat one side of an asbestos, paper or canvas gasket with graphite and the other side with oil or varnish. This facilitates removals and holds the gasket in place.

[276]—How can a cracked or broken gasoline pipe be temporarily repaired?

A.—Slip a piece of rubber tubing over the pipe, or wrap a piece of sheet rubber around it and bind with tape and string. Adhesive tape will not hold long on account of the gasoline dissolving the rubber in it.

Or put rather soft bar soap on the pipe and wrap with tape such as is used on clothing. Bind with cord. In the absence of tape a piece of strong paper may answer. Rubber cement, instead of soap, may serve for a very short time.

[277]—How can a leaky radiator be repaired?

A.—Sometimes it is possible for the novice to repair it by soldering. It is generally a decidedly difficult operation, however, and there is danger of doing more harm than good by opening up some of the other soldered joints. In such a case the only satisfactory solution is the skilled repair man.

A honeycomb radiator can be temporarily repaired sometimes by putting a small bolt with a soft washer at each end through the tube around which the leak occurs; tightening the nut on the bolt will draw the washers against the ends of the tube so as to stop the leak. A rubber washer or one of steam packing in the sheet form will do, back soft washers with stiff metal ones.

[278]—How can a loose nut be prevented from jarring off?

A.—A temporary expedient is to wrap a piece of string under the nut so that when the latter is drawn tight it will pinch the string between it and the part against which the nut would otherwise bear directly. In case the nut is in a place that becomes very hot, some such material as asbestos cord with a wire core is suitable. A thin copper wire may answer in any case.

A split lock-washer under the nut will of course always hold it in place. It is sometimes objectionable, however, because of its cutting and gouging the metal when the nut is removed.

[279]—How can a tire be tested for a leak at the valve?

A.—Turn the wheel so that the valve is at the upper part and hold a glass of water around the valve. Bubbles will pass out through the water if the valve leaks. Or saliva can be put around the valve stem cap and note taken of the appearance of bubbles.

The valve itself may be leaky, but the cap on the stem tight. To determine this, move the cap and test as above.

The best remedy for a leaky valve is a new one. They are inexpensive. The valve can be screwed out with the slotted end of the cap. A leaky valve can sometimes be made tight temporarily by putting a drop of oil on it. Use only a drop.

[280]—How can an inner tube be examined for punctures or slight leaks?

A.—If the tube has been punctured by a nail or a wire, look for two holes; one next the tread and the other on the side next the rim The punctures may be invisible with the tube deflated. Then pump up the inner tube to a light pressure and examine by stretching the rubber while holding it near the face or ear. Too much pressure will cause it to suddenly bulge at one point and possibly rupture. If the leak cannot be found in this manner, immerse the tube in water and look for bubbles while stretching the rubber. The valve should also be immersed.

Narrow Street Work

The Wheelbase Length Affects Turning of Car in Narrow Street

SELECTING an automobile is not so simple a matter as it looks. The intending purchaser, in addition to desiring a well-built car, of good material, accuracy of workmanship and appropriateness of design, must necessarily have in mind the nature of the service that is to be rendered, and he must govern himself accordingly. If a car is wanted for long-distance touring over mud and such other roads as may be encountered, this service will naturally suggest a long wheelbase, large diameter wheels, much power with great flexibility, a transmission gear with at least three speed changes, a well-fixed gear ratio, excellence of the spring suspension, a good windshield and a proper top, deep cushions and wraps.

But these are precisely the facilities that are not wanted in an automobile that is to go around in a congested district, and be sufficiently mobile to make city service pleasant and profitable. It is worth a great deal to be able to turn a car around in a complete circle, even if the street is comparatively narrow, and this facility puts a limit on the length of the wheelbase. Where the wheelbase can advantageously be from 116 to 124 inches in general touring work, it is necessarily limited to a maximum of 110 inches if turning around in narrow streets is to be measured as a particular advantage, and 100 inches would be a very good figure for town car and taxicab work, considering this point only

Don'ts for the Autoist

A FEW MEASURES OF INDIRECT VALUE TO THE MAKER, DEALER AND USER; THE PUBLIC AT LARGE CAN CHIME IN IF IT WANTS TO

Don't imitate the ass who starved to death between two haystacks; tackle one of the two; be the apex of a flying wedge and put on steam.

Don't work like a slave to get a few dollars and then work like a slave to get rid of your hard-earned pelf.

Don't hanker after everything that intercepts your line of vision; there are a lot of things in this world that you do not need.

Don't really want for anything; go after what you need; get it; it is a mere matter of the advantageous expenditure of energy.

Don't forget that energy is a most vigorous form of resistance that can only be overcome by an equal display of the same force.

Don't throw away the energy that is at your beck and call in your mad desire to acquire energy that is pre-empted.

Don't measure energy, in the form of dollars, as being your property, unless you can hear them clink against each other in your pocket.

Don't throw the nest-egg away just because the hen is not laying to-day.

Don't tug away on a thing that you cannot lift—get a crow-bar and pry it up from the pest who holds it down.

Don't stand on the peak of a high mountain and say, "I wish I owned all that I can see." It is more to the point to go down on the working level and chase opposition up a tree.

Don't borrow money for a day—wait a day and there will be no occasion to incur the liability.

Don't be dismayed by the pole-cat who threatens your right-of-way; execute a flanking movement, but don't forget that the predicate is not the subject. The pole-cat is predicate to the subject, but the subject lies beyond. Flank the cat, but stick to the subject.

Don't disregard the fact that nothing is useless if it lightens the burden—make every point tell.

Don't accept the dictum that knowledge is cheap; it would be were it not for the fact that experience is power.

Don't cackle like a hen or roar like a lion; they are level-fixing habits; one lays eggs and the other serves as a door-mat.

Don't confer benefits that do not belong to you—let the owner thereof be the dispenser thereof.

Don't cheat yourself as you do when you say that you would do a thing if you had time; time is yours whether you like it or not; will you waste it?

Don't whine if you tax yourself as you do when you fail to think for yourself.

Don't forget that it is with loaned money that all the harm is done; if you loan you are a harm-doer; if you borrow you are harmed.

Don't partake of real sound stupidity in which you will be unrivaled if you expend all the money you have in an automobile, leaving nothing with which to meet the maintenance charges.

Don't forget that the path of life leads to something; find out what it is; if it is good, throw in high gear; if it is not good, clap on the brakes.

Don't do less than Stradivarius, who made violins; or Leonardo, who painted good frescoes; or Napoleon, who dragged cannons over the Alps; or Wellington, who made St. Helena famous.

Don't make a canyon out of a foot-path; blaze the way, but let it be a way of your making.

Don't dig for coal in a culm pile; Mother Earth welcomes you in virgin fields.

Don't think that because you are one of 90,000,000 that you have to ride on the cart of despair; there are thrice 90,000,000 opportunities rotting for want of attention.

Don't take off your hat to success; tackle the jade.

Don't forget that when the jay hoards up nuts for the winter the squirrel makes a memorandum of the location of the bird's store-house.

Don't choose between a tyrant and a conqueror; just be the latter.

Don't make your abiding place anything less than a king's palace, nor forget that some kings' palaces are fools' Paradises.

Don't be a little potentate; there is nothing the matter with playing the part of a big man.

Don't know yourself by the little things, nor pause on the crest of the biggest wave—go on!

Don't glut yourself at the breakfast of life or be stilled by wine at life's dinner—beyond lies supper and the long evening with its manifold enjoyments.

Don't accept the utterances from the tongue when the eyes speak another language—believe what the eyes say.

Don't let money be the principal object; life's work should be the aim, and money but one of the increments of the dividend.

Don't be a swine; it is to be bombarded with pearls that will look to you like cobble stones.

Don't be nonplused by the bright stars that are fanned into a flame by a passing breeze.

Don't silence the human voice and struggle to reach the heart of the antagonist with a sharper instrument—no weapon of man's devising is the equal of a well-modulated voice.

Power of Motors

May Never Be a Mere Matter of Piston Displacement

STRANGE as it may seem, the idea has gained a footing that the power that is to be expected from internal combustion motors is proportional to the piston displacement. This would be true were all motors made exactly alike, but such is not the case—far from it; they are at wide variance with each other. The piston-displacement rule as it is promulgated by racing boards is not based upon the assumption that for equal displacement the power of the several motors will be the same. The real idea is that for a given displacement the power of all motors would be the same were they all equally designed. Of course, all the motors would be equally bad, or good, according as the model showed capabilities, and this is the possible danger to be encountered when standards are established. If the standards are high, the products will show the same characteristics. The piston displacement rule leads to abnormal conditions in racing, due to the fact that it is possible to so design a motor that it will deliver power at a high speed and be incapable of performing at all at low speed. This will be true if the "cold compression" is so high that the mixture will pre-ignite at low speed and only operate when the speed is so high that the compression will be lowered by wire-drawing of the mixture. It will be possible to start a motor of this character, but it will not be possible to run it at a low speed.

Speed with Security

BY MARIUS C. KRARUP. THE "FIFTY PER CENT." REDUCTION OF TRAFFIC-EASE RESULTING FROM PRESENT METHODS—THE PHYSIOLOGY OF OBSERVATION AND CAUTION. (SECOND INSTALLMENT.)

IF it is assumed that the present legal regulations, while in most localities onerous and one-sided, would safe-guard traffic as much as is required if they were enforced, but accomplish this object (wherever it is accomplished) mainly by cutting down the average speed to something less than is intrinsically desirable, it follows that the cutting out of elements which are admittedly important sources of danger and inconvenience, but which have never so far been subjected to regulation or elimination, must result automatically in raising the average permissible speed not only for automobiles, but for all members of the traffic which are capable of taking advantage of the change. Systematic agitation on this basis would pave the way for a general understanding of the fine points involved—points which are not necessarily too fine drawn because they have not so far been spontaneously and commonly appreciated. Nearly all the factors in modern civilization which make civilization what it is, and which no one would think of abandoning, are in their origin beyond the range of popular insight. The automobile motor is one of them. The true means for securing safe traffic in conjunction with high average speed may be similarly inconspicuous to the average mind before their efficacy has been proved in practice, and yet they may be readily perceived by the specialist who is acquainted with the underlying facts and is accustomed to weigh the values of general ideas, one against the other.

The traffic regulation in New York city offers an example of speed increased by means of the suppression or regulation of other dangerous elements. By halting the traffic at crossings and sending it away in blocks, the average speed of the traffic has been raised considerably and the safety of pedestrians has been increased at the same time. At high speed more vehicles pass a given point in a given time. Inversely, at any one point a given number of them are farther apart.

One of the leading considerations, when one is looking over the hindrances which at present exist against the general adoption of speedy traffic, is presented in the obvious requirement that the reasonable degree of caution which everybody is expected to observe shall not be reduced from a mutual to a one-sided obligation. The normal condition of the past—preceding the automobile—has been that A looked out for B, but also that B looked out for A. Neither A nor B can be satisfied to have safety reduced 50 per cent. at the outset by having all the obligation or all the ability to observe caution delegated upon one of the two. "Fifty per cent." is here used figuratively. It may be more or less. Nobody can tell the exact relations. Perhaps security depends 25 per cent. on one party's caution, 25 per cent. on the other party's caution and 50 per cent. on the combination of both. The vital fact is that it suffers when the full use of the senses is not shared by all concerned.

This condition is realized, however, if traffic member A is usually so placed that it is physically impossible or difficult for him to get out of the way of an automobile unless the driver B of the automobile observes him and voluntarily contributes his share by veering from his course, slowing up or signaling. Evidently speed is in this respect of importance; in fact, the largest element of all the danger ascribed to speed consists in this reduction of chances. The remedy consisting in speed reduction would be almost ideal if it were desirable and if it could be enforced. But, being undesirable, it cannot be enforced, and slow speed, adopted as a rule but most conspicuous by its exceptions, becomes perhaps more dangerous than an expected high average speed which the members of the traffic learn to more or less accurately gauge and look out for.

The "fifty per cent." reduction of tranquillity and safety which undeniably must be the result if one person instead of two is depended upon for producing the desired situation in each instance is so serious, if anything in traffic regulation is serious, that it must by some means be counteracted if it shall be said that the system of regulation is efficient. A fifty per cent. reduction of ease and a somewhat corresponding reduction of safety in traffic would be too high a price to pay for speed. From this viewpoint, among the 16 causes of disturbance enumerated above, those which involve a reduced capacity for observation on the part of all traffic members with regard to the speed and direction of the movements of automobiles should be considered in the very first line, if they have not been considered before, and remedies should be devised for their removal. Probably No. 8 among these causes of trouble has been less considered than any other, and is also in itself the most important one, partly because it applies to all automobiles and partly because the existing deficiency to which it refers would seem to be removable without hardship in any direction. It relates to the lack of change in the contour of a moving automobile. Its importance depends mainly upon facts with which all well-informed physicians are familiar. These facts relate to the physiology of the senses. Leaving aside all scientific phraseology, the condition for perceiving motion in one's surroundings may be said to consist in having motion represented in the sense images produced in the brain of the observer or the person who is in line for receiving a sense image, whether consciously observing or otherwise. Motion in a sense image means change from one image to a different one. If this change from one image to another is slow or very small, the idea is conveyed to the mind that the thing in the surroundings which moves is distant or moves slowly. The mind can usually determine whether it is slow or distant by the aid of a number of simultaneous sense images; that is, sound helps to interpret sight, and man's dual or perspective vision, due to the co-ordination of the two eyes, is in itself usually sufficient for deciding whether the motion is slow or distant. When the attention of the person is focussed upon the moving thing the difficulties in forming accurate perceptions are, of course, minimized, but for the subject in hand the question is one of the perceptions formed under less favorable circumstances, as when the "mind is absent" and the different senses are not consciously co-ordinated. Examples may illustrate the matter. When a person places his finger upon another person's naked arm the act is noticed distinctly because the sense image of the touch represents a change, but if the finger remains there and is not noticeably warmer or colder than the arm the mind, if otherwise occupied, is likely to become nearly unconscious of the presence of the finger, the sense image produced by its light pressure remaining without change except such as may be due to pulsation, slight difference in temperature, etc. If a person not intimately familiar with the gait of horses hears the steps of a walking horse, but sees nothing, he receives frequently the impression of two horses trotting or of a fast canter, because the walk produces a more rapid succession of separate and distinct auditory sense images and only the slow change in the distinctness of the sounds convinces him after a little hesitation that the movement causing the sounds is in reality slow, whereupon he reasons that it is a walk. Similar hesitation in the traffic is to be avoided.

Digest

A SHORT EXPLANATION IS OFFERED HERE OF TWO RECENT FOREIGN DEVICES INTENDED TO CHEAPEN THE PRODUCTION OF AUTOMOBILES DESIGNED FOR THE HUMBLEST FORMS OF TRANSPORTATION—SINGLE-LEAF VEHICLE SPRING AND SUBSTITUTE FOR DIFFERENTIAL

The production of automobiles of extremely low first cost, which may be adapted to displace the horse in even the humblest forms of transportation, continues to engage the attention of European designers. Francis Ernoult proposes a new type of vehicle spring which might be applied to such automobiles at first, though he believes its field of application should eventually prove much wider. He wants to use a spring plate of uniform thickness and varying width instead of the multiple leaf spring of uniform width and varying thickness. The illustration (Fig. 1) shows the comparative dimensions of an ordinary vehicle spring and of the one-leaf spring intended to take its place, and also two other shapes in which triangular cut-outs or a series of perforations permit the sides of the spring to remain parallel. With regard to simplicity and cost of making, Ernoult mentions that, apart from the eyes, which are alike for both types, the one-leaf spring may be stamped in a single operation, while the ordinary spring requires many. When cut to length each of the leaves must be arched, one differently from another; they must be perforated for the assembling bolt, the ends must be rounded, they must be beveled, slotted and pinned or spurred, the leaves must be placed and adjusted with care, lubricated and mounted. As to wear, the single leaf escapes the friction of one leaf upon another and therefore demands no care, while the multiple spring must be taken down occasionally, cleaned and greased. The single leaf works always in the same manner, while the multiple one creaks and becomes hard, when not greased, and weaker from wear. Defects in the temper or curve of any one leaf may cause it to break.—*La Technique Automobile et Aérienne,* October 15.

Evidently with a view to very cheap construction, Léon Charpaux offers a substitute for the differential gear in the arrangement shown in the sketch (Fig. 2). The axle A is supposed to be driven from the sprocket wheel O and is joined rigidly with the hub C of one of the driving wheels by means of a squared end portion and a nut. The other end has two short squared portions D and F, between which lies a cylindrical portion operating as a bearing member for the other driving wheel, the bushing J being interposed. Two friction plates G and H are mounted upon the squared portions D and F and are pressed against the adjacent surfaces of the wheel hub by spring K, secured by a nut. Leather washers between plates G and H and the hub surfaces are kept lubricated from a mass of consistent grease filling the hollow spaces in the hub. The tension of the spring K is adjusted to produce a friction coupling which will hold tight for straight driving, but will yield more or less at turns (and grades), permitting the wheel to rotate faster or slower than the other.—*La France Automobile,* No. 38.

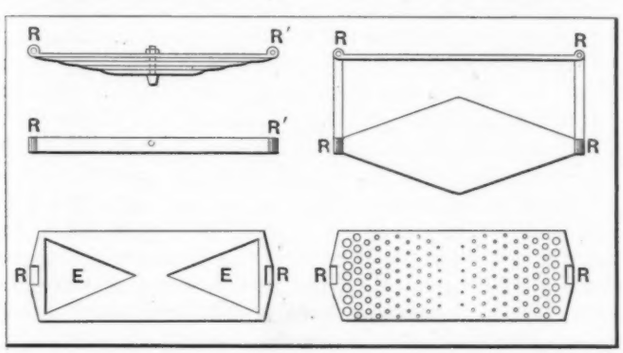


Fig. 1—Diagram indicating dimensions of Ernoult single-leaf vehicle spring and the ordinary multiple-leaf spring. E, triangular cut-outs

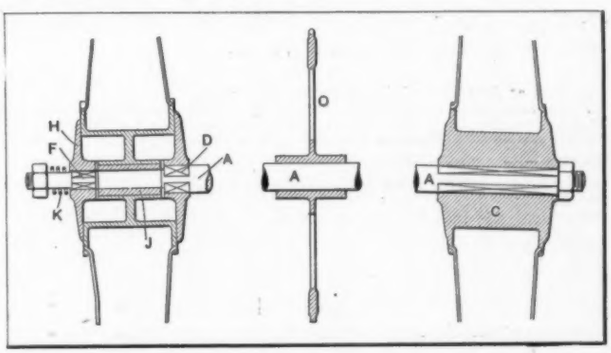


Fig. 2—Cross-sections showing the workings of the Charpaux substitute for the differential gear

Coming Events

CALENDAR OF FUTURE HAPPENINGS IN THE AUTOMOBILE WORLD THAT WILL HELP THE READER KEEP HIS DATES STRAIGHT—SHOWS, RACES, HILL-CLIMBS, ETC.

Nov. 19-26.....	Oakland, Cal., Idora Park Show, Under Management of Oakland Automobile Dealers' Association.
Dec. 1.....	Chicago, Ill., First Annual Aeronautical Exhibition in the Coliseum.
Dec. 31-Jan. 7, '11.	New York City, Grand Central Palace, Eleventh Annual International Automobile Show.
Jan. 7-14, 1911...	New York City, Madison Square Garden, Eleventh Annual Show, Pleasure Car Division, Association of Licensed Manufacturers.
Jan. 11-12.....	New York, Annual Meeting, Society of Automobile Engineers.
Jan. 14-28, 1911..	Philadelphia, Annual Show, Philadelphia Licensed Automobile Dealers' Association, Third Regiment Armory.
Jan. 15-21, 1911..	Detroit, Wayne Gardens, Detroit Automobile Dealers' Association.
Jan. 16-21, 1911...	New York City, Madison Square Garden, Eleventh Annual Show, Commercial Division, A. L. A. M.
Jan. 28-Feb. 4,'11.	Chicago Coliseum, Tenth Annual National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc., Pleasure Cars and Accessories, Exclusively.
Feb. 6-Feb. 11,'11.	Chicago Coliseum, Tenth National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc., Commercial Vehicles, Pleasure Cars, Motorcycles and Accessories.
Feb. 18-25.....	Minneapolis, Minn., Annual Show Minneapolis Automobile Show Association, National Guard Armory.
Feb. 18-25.....	Binghamton, N. Y., Second Annual Show, Binghamton Automobile Club and Chamber of Commerce, State Armory.
Feb. 24-27.....	New Orleans, La., Annual Show, New Orleans Automobile Club.
Mch. 4-11, 1911...	Boston, Mechanics' Building, Ninth Annual Show, Licensed Automobile Dealers' Association.
Mar. 25-April 1..	Buffalo, N. Y., Fourth Power Boat and Sportsmen's Show, Sixty-fifth Regiment Arsenal, Buffalo Launch Club.
Mch. 25-Apr. 8.....	Pittsburg, Annual Show, First week, pleasure cars; second week, commercial trucks. Automobile Dealers' Association of Pittsburg, Inc.

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H. M. SWETLAND, President
A. B. SWETLAND, General Manager
231-241 West 39th Street, New York City

EDITORIAL DEPARTMENT
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ELECTRICALLY, activity is pronounced. The coming of the Edison storage battery has awakened financiers to the unlimited possibilities for safe investment in this field. The managers of central electric lighting stations are everywhere preparing to charge electric vehicles upon demand; they can afford to do this work at a price that will compare favorably with, if not outstrip, the cost of gasoline, especially if the demand be made upon them during the hours of the day when their machinery is lying idle—eating its head off, so to say. It is not strange that the whole battery situation should take on a new and hopeful attitude. Competition is the life of trade, unless it gets a strangle grip; but if it is possible to silence an industry by competitive strangulation, it is no less feasible to reduce it to a state of perfect stagnation by a strong grip uncontested. There never has been the shadow of a doubt about the ability of electric vehicles in short-haul work. The points of demerit were recognized when reference was had to long-haul work, and to the life of the battery. Clearing up these retarding influences is sufficient to awaken capital, and when this potential force responds to the call, it brings with it enterprise, brains, and brawn.

* * *

DUE to the splendid foresight and thoroughly good management of the citizens of the South, and those of Savannah, Ga., in particular, the Grand Prize was run under the most favorable conditions, from the point of view of the track, the policing, and the looking after the visitors from afar and the folks at home. It is to be regretted that so much cannot be said for the contestants. From abroad came cars that had such a high center of gravity that they tipped over, and such soft material that the axles sprung, or the parts gave out. Among the American cars, there were two points of demerit, one of which was represented in the car that was driven fast enough to win but that was fitted with tires that were too small; nor was any provision made for replacing them with tires of the proper size, thus tracing the losing of the race directly to tire trouble of the kind that has nothing to do with quality. It was a clean case of lack of preparedness, and the reckless trusting to luck; luck was snoozing in the other fellow's back yard. The second demerit is attached to the splendid automobiles that performed consistently from start to finish, with no sign of mechanical trouble of any sort, nor even tire trouble. In those cases, had the cars been driven fast enough to induce a little tire trouble, it is more than likely that the result of the contest would make different history and better reading.

* * *

IN the operation and care of automobiles it seems to be necessary to continue to point out the advantages that are to be derived if the lubricating question is attended to with precision and intelligence. On page 831 of this issue a car is raised up at the fore, and some of the points for lubrication are indicated, and it is the purpose here to go on record as saying that, however inconspicuous these points appear to be, they are just as much entitled to attention as the crankshaft of the motor or the gear spindle in the transmission case. Statistics, of which the supply is too meagre, point absolutely to one thing, and that is that the average automobile is relegated to the scrap heap because it makes too much noise. Strange to relate, the average automobilist troubles himself much about the quality of the motor, and the ability of the transmission, in the face of the fact that these main units rarely ever give out. The way to make cars last longer is as simple as A B C. It is a plain case of putting lubricating oil on the little bearings that are here and there in the chassis, even if this extra effort results in some lack of attention to the motor.

* * *

JUST to show that tires are subject to frightful abuse, if they are permitted to intercept road inequalities while they are in an uninflated condition, some tire prints were made, and reproduced on page 839 of this week's AUTOMOBILE, and they offer conclusive evidence of the fact that this form of neglect is companion to a most destructive process. The test shows that a 34 x 4 inch tire on the wheel of an automobile tracks 3¼ inches when the pressure is 80 pounds, and the tire is rolled up on a 60-degree surface, but the same tire with the pressure reduced to 10 pounds tracks 6 inches. The width of the imprint in tracking is an index of the flexure induced, and the difference between satisfactory service and a disconcerting tire bill is represented in the difference between almost no flexure and a very little bit. In the meantime repeated tests show that tires are not maintained in a proper state of inflation; in many cases the pressures are below 50 pounds per square inch, but the chauffeurs almost invariably claim that it is from 80 to 110 pounds; they do not seem to know just what pressure is being maintained, and in some instances the chauffeurs had gauges in their tool-boxes which they failed to use.

News Section

HAPPENINGS OF THE WEEK IN VARIOUS SECTIONS OF THE COUNTRY AS GATHERED BY THE 84 SPECIAL WRITERS AND CORRESPONDENTS OF "THE AUTOMOBILE"

Benz and other foreign cars wrecked during Savannah race. Big list of visitors entertained in Southern style. Velie wins and loses in litigation with A.L.A.M. News of Olympia Automobile Show. News of seventeen different automobile shows. Triple tie in Chicago Motor Club Reliability. Matured debts of General Motors Company ordered paid—new board elected—Durant remains. E. R. Thomas Motor Company fails. Society of Automobile Engineers will meet January 11 and 12. Important happenings pending.

Savannah Grand Prize Race in Silhouette

Pertinent facts about the Grand Prix: The race was over the longest route ever attempted in America, 415.2 miles, 24 rounds of a course 17.3 miles long. The winner broke the American road race record, averaging 70.55 miles an hour. His car was a giant of power, the pistons displacing 920 cubic inches. The race was won by less than 1 1-2 seconds, the tightest fit ever experienced in a big road race. Bruce-Brown, the winning driver, is the son of wealthy parents and drives for the excitement of driving. He only recently graduated from the amateur ranks; in fact, until this race there was some doubt as to his having surrendered his amateur standing.

THE Marquette-Buick, No. 17, which finished third, made the best performance ever receivey by an American car in a road race. This creditable showing is all the more remarkable on account of fifteen tire changes required to keep the car going. As usual with the Buicks, the car was driven and beaten and lashed throughout the race; was run at terrific speed on the turns and through the unfortunate fact that its tires did not fit nearly every round found it in trouble. Despite all these things the car finished the full course. Conservatively driven on tires that fit, this car should have been much further to the front. While the rated horsepower of this Buick is only 57 3-5, upon dynamometer test it has showed 120 horsepower.

The Lozier pair and the Marmon, which completed the route, showed careful driving and splendid stability. The Loziers could have gone faster. Mulford did not have to change a tire throughout the race and there is no doubt that the white car could have plugged along several miles an hour swifter than it did. However, the reliability of the performance was generally commented upon. Horan's Lozier did a little more spurting than that of his teammate, but was not quite so steady. The little Marmon, the smallest car in the contest, did all it could.

Already the Savannah Automobile Club has made application to stage the running of the Grand Prize in 1911, and from the success attained in the recent race the chances favor such an outcome.

The system used to protect the track from over-running by spectators was as near perfection as can be imagined. Armed soldiery to the number of over 400 guarded the whole course effectively. Governor Brown of Georgia, representing the State, the County Board, representing the county, and Mayor Tiedeman of Savannah with the city officials, representing the city, gave the affair the aspect of an official function.

The citizens of Savannah and the Savannah Automobile Club showed a superior brand of Southern hospitality. Homes were thrown open right and left for the accommodation of visitors and everything was done to make the attending Northerners feel at home. Prices were high and in some of the hotels accommodations were impossible to get, but there was little complaint from any quarter.

It is estimated that fully 100,000 strangers were in Savannah Saturday. In some quarters it is figured that probably 150,000 would be closer to the true number.

One of the interesting features of the social side of the race was the dinner tendered to Governor Brown by the Motor Racing Association on board the "Wall Street Special" Friday night. A number of speeches were made and the guest of honor replied in a welcoming oration.

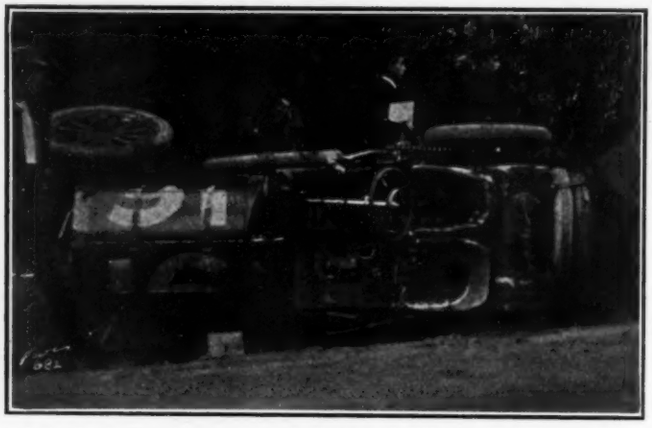
The whole affair was ably conducted without reference to expense and the impression created was wholly pleasant.

Benz and Fiat Racers Wrecked During Race

SAVANNAH, GA., Nov. 14—Now that the big race has passed into history, the preliminaries that insured such a brilliant success as was attained are coming in for much commendation all around. The work of the officials was done with refreshing precision during the running of the race. Not a slip was noted and not a word of criticism is spoken of them and their work.

The accident that put Wagner's Fiat, 16, out of the running might have been avoided had the driver heeded the warning of the technical committee in time. A bolt in the left side of the right front spring broke early in the race, causing a crack in the spring seat. He was flagged in the eleventh lap and it was suggested to Wagner that a new spring seat be installed. Caleb Bragg, team manager, added his advice to that of the committee, but Wagner declined to stop for repairs. In the seventeenth round while passing over the one soft spot on the course something yielded and spectators saw the car strike an abutment of a bridge and turn end for end into the ditch. Whether it was simply a skid on the soft place in the road or whether the rest of the spring clips gave way can hardly be determined with certainty because the impact of the car broke off the front axle at the

Wreck of Benz car as it was shown disabled alongside of the track



Fiat racer driven by Wagner with a bent axle which threw the sprocket chain off

weakened spring seat, even if the break did not occur prior to striking the bridge.

Benz car, 18, driven by Haupt, was badly wrecked while the driver was attempting to make a sharp turn at the Montgomery cross roads. The car was unable to swing safely into the straightaway at the speed at which it was going and turned over and over into the ditch, throwing the driver and his mechanic clear of the wreckage. By some marvelous freak of luck neither was seriously hurt.

"Wall Street Special" a Big Success

The "Wall Street Special," the solid vestibule train run from New York to Savannah over the Atlantic Coast Line to accommodate metropolitan motor enthusiasts who wished to see the race under ideal conditions, proved a big success. The Motor Racing Association had charge of the train and conducted the affair with much careful forethought.

The train consisted of five Pullman stateroom cars, an observation car, dinner, composite and baggage car. The journey in both directions was accomplished without untoward incident and a pleasant, comfortable time was enjoyed by those who composed the party.

The following is the list of passengers on the train: Horatio M. Adams, H. P. Burchell, E. R. Bergdoll, H. A. Beale, Jr., Mrs. Beale, George McK. Brown, Robert McC. Butt, Duncan Curry, Mrs. Curry, C. M. Chauncey, George Chorpening, A. B. Cordner, O. J. Delaney, Mrs. Delaney, E. T. Delaney, C. A. Frank, Miss Fish, F. Gregory, L. D. Gregory, G. M. Graham, Willis Holley, A. E. Hall, Mrs. Hall, Robert Hager, Jr., J. R. Humpton, Mrs. Humpton, E. E. Hewlett, J. S. Hartsell, Frank Johnson, Ed. Korbel, John Kerrison, F. Keenan, R. W. Kane, Emanuel Lascaris, Harry B. Lasher, J. McNamara, E. C. J. McShane, Charles Meegan, Thomas F. Moore, Mrs. Moore, Edward Moss, M. S. J. J. Mullen, Edgar G. Murphy, E. B. Nussbaum, E. S. Partridge, A. Rostein, M. J. Sullivan, G. L. Sullivan, E. E. Schwarzkopf, James Sullivan, H. M. Swetland, A. N. Sweeney, A. J. Smith, George Thomas, 3d, Jonathan Thompson, George H. Tangeman, George H. Thomas, Mrs. Thomas and and G. Weiss.

Sharp Dead as Result of Accident

SAVANNAH, GA., Nov. 14—W. H. Sharp, automobile manufacturer and entrant of the Sharp-Arrow car in the Grand Prix race, died to-day at the Savannah Hospital as the result of injuries received when his car turned over in practice for the big race last Thursday. Mr. Sharp was internally injured and his mechanic, Albert Fuchs, was almost instantly killed.

Mr. Sharp designed the car that cost him his life. He was originally a photographer at Trenton, N. J.

Bruce-Brown Also Won Back His Home

SAVANNAH, GA., Nov. 14—Winning the Grand Prize race was not the only agreeable development Saturday as far as David Bruce-Brown is concerned. The winning was fine, but there was something else about the result that will appeal to Mr Bruce-Brown with more force even than being returned a winner for he regained his home and won the prize at the same instant. The youthful driver became interested in motoring while he was a student at Yale and late in his college career he bought a big racing car. He was reticent as to his plans, at least as far as discussing them at home is concerned, and when the newspapers came out one morning with the story of how he had driven and won an important race, his mother, a wealthy and prominent member of society, forbade him to repeat his performance on pain of losing his income.

Bruce-Brown did not consider the proposition long and cast his lot unreservedly with the drivers of racing automobiles. Domestic relations were strained, in fact cut off for a long time thereafter.

But when the young man steered his giant racer back to the pits after flashing past the judges a winner, the first person to greet him was his mother. She could not wait until he removed his cotton mask, but rushed into his embrace as he stepped from his car.

Those who sat near the mother in the stand during the race declare that she "pulled" openly and fervidly for the success of her son.

His future as a race driver is being discussed widely and from a number of viewpoints, the general opinion being that his future course is in the balance.

Velie Wins One Decision, but Loses Another

Wisconsin Supreme Court holds against four concerns of A. L. A. M., who sought to check conspiracy action in Circuit Court. The Federal Circuit Court in opinion on merits of contract between Velie and Kopmeier sustains demurrer of Milwaukee representatives of motor company, holding that the contract was one of agency and not of outright sale.

MILWAUKEE, Nov. 14—Two particularly important opinions of high courts have been filed recently in connection with the litigation instituted by the Velie Motor Vehicle Co., of Moline, Ill., against the A. L. A. M. and its constituent members and its former representative in Milwaukee, Wis., the Kopmeier Motor Car Co.

The first of the decisions is embodied in the opinion of Chief Justice Winslow of the Wisconsin Supreme Court in which the court holds favorably to the plaintiff in a matter of procedure. In the other case, which was brought in the Federal Circuit Court, Eastern District of Wisconsin, Mr. Justice Quarles sustains the demurrer of the Kopmeier Motor Car Co. and holds adversely to the merits of the Velie Co.'s claim.

In the suit against the A. L. A. M. the Pierce-Arrow Motor Car Co.; the Chalmers-Detroit Motor Car Co.; the Pope Manufacturing Co. and the American Automobile Co. filed writs of prohibition to nullify service made upon their representatives in Milwaukee on behalf of the original suit of the Velie Co. The method taken was to invoke the power of the Supreme Court of the State to prohibit the Circuit Court from proceeding with the cases against the defendants.

Chief Justice Winslow holds that the relief prayed for is not

proper and peremptorily denies the motion to restrain the Circuit Court, without going into the merits of the case.

The status of the litigation is placed at the same level it would have assumed if no question had been raised as to the service upon the defendants.

In the Federal case the decision is more radical.

The Velie Co. entered suit against the Kopmeier Motor Car Co. to recover damages for the alleged breach of an executory contract based upon an agreement set forth in the contract between the parties, that the Kopmeier Motor Car Co. agreed to handle the Velie product in the Milwaukee territory and under the agreement promised to buy at least 50 motor cars.

Judge Quarles holds that the contract as set forth is not a contract of sale, but rather one of agency. The foundation for his reasoning is the fact that in the contract it is provided that the Kopmeier concern is required to perform certain acts with regard to the automobiles, alleged to have been sold under terms of the contract, long after they would have passed absolutely to the Kopmeier Co. if the contract had been one of sale and not of agency.

The defendant company filed a general demurrer to the complaint and the court sustains the demurrer, which defeats the suit so far as the allegation of sale to the Kopmeier Co. is concerned.

In the suit against the four members of the A. L. A. M., which was decided favorably to the complainant's contention, a dissenting opinion has been filed by Judge Timlin, which was concurred in by two other members of the bench.

Mayor Gaynor Knows How to Get Around the Callan Law

NEW YORK, Nov. 16—1,200 chauffeurs are on strike and they decline to come to an agreement with their respective companies in the taxicab business unless their union is recognized. Mayor Gaynor has undertaken to bring about a settlement, and is showing some impatience at the inertia of the strikers.

It is now proposed to encourage strike-breakers, and the Mayor, according to the most recent report, threatens to put a policeman on every cab for the purpose of protecting property and the strike-breakers. No doubt a settlement of the strike will be effected in the long run, but it is interesting to note that the strike-breakers will either have to comply with the terms of the Callan Law and show competence, or if the Mayor puts policemen on taxicabs, he will do so for the purpose of protecting law-breakers.

The only reason for giving this whole matter serious thought lies in the fact that the citizens of the Empire State have had this law inflicted upon them, and it was foisted by a set of men who are making a living out of it, but strange to relate, the chauffeurs were in favor of it, and automobilists were indifferent. It was the most slippery piece of law-making of which we have any record before us, and those who have to deal with the striking chauffeurs now know why they did not oppose it.

In the meantime, the plain citizens now know why automobilists were indifferent. A law that permits a band of chauffeurs to take the community by the throat should be quite satisfactory to the chauffeurs themselves, but a law that permits children to drive without a license is only good for one purpose, and that is to give cheap politicians a job. In the meantime, we wonder how the Mayor can afford to violate the law in the process of upholding it.

E. R. Thomas Motor Company Goes Under

BUFFALO, N. Y., Nov. 14—Inability to secure financial relief and a strike at the Reading factory in which its frames are made are given as the causes of the failure of the E. R. Thomas Motor Company, of Buffalo. The company had been in close quarters since early Summer and recurrent rumors of financial troubles were circulated at intervals.

Matters came to a crisis last week when E. R. Thomas, president of the company, issued a statement to the creditors appealing for time to gather the resources of the company and to try to make additional financial arrangements. In this statement Mr. Thomas says that until the last few weeks he had been quite hopeful for the affairs of the company, but that the onslaught of the bankers, politics and commercial conditions had prevented the acquisition of more funds.

Mr. Thomas declares that the company owes him more than it does all the other creditors together, and states that he is willing to wait for payment until the company can shape its affairs.

In putting the matter directly to the creditors, he says that the creditors have everything to gain and nothing to lose by delay in court proceedings. He says that he has loaned the company $300,000 in cash and much valuable collateral and asserts that he has reason to believe that a reorganization of the company on conservative lines will be accomplished within a week through the injection of Buffalo capital. This is to be made available by reason of the collateral loaned by Mr. Thomas.

No formal proceedings have been instituted to date against the company as far as the records show.

Remington Gets Manly Drive License

NEW YORK, Nov. 16—Emerson Brooks, who is the retiring general manager of Rothschild & Co., and for 20 years vice-president of J. M. Quinby & Co., of Newark, N. J., is booked for the vice-presidency and general management of a new undertaking under the name of the Remington Standard Motor Co., which concern has just been incorporated under the laws of West Virginia, with a capitalization of $1,000,000. This new company is taking over the plant of the Baldwin Steel Co., at a valuation of $229,000. The new concern will be "at home" at Charleston, W. Va., but the executive office will be at 1597 Broadway, New York City. F. M. Staunton, president of the Kanawha Banking & Trust Co., of Charleston, has been elected second vice-president; George A. Grounds, president of George A. Grounds & Co., of Pittsfield, Mass., is treasurer, and the directors of the new concern are: Eliphalet Remington of Ilion, N. Y., DeWitt Bruce, of Lenox, Mass., and Harrison B. Smith, of Charleston, W. Va. The most important undertaking of this company will be represented in the manufacture of a 2-ton truck, utilizing the Manly hydraulic transmission, the details of which were given in THE AUTOMOBILE more than a year ago, in which it will be remembered that the gasoline motor is hooked up to a battery of hydraulic pumps, and they in turn drive a battery of hydraulic motors, the latter being attached to the rear road wheels of the truck. This plan does away with the transmission gear, differential and bevel drive, also the extensive lever control system, including brakes as ordinarily required. The first truck of this type has been run around New York for a couple of years and works extremely well.

Trade Association to Give Reliability Run

November 29 and 30 have been selected as the dates upon which the New York Automobile Trade Association will hold its two-day endurance run through New York, New Jersey and Connecticut. The contest is open to stock cars which will be classified under Class A, in its seven divisions.

W. C. Poertner is active in promoting the affair. An entry list of 25 cars has been promised and there is a likelihood of half a dozen others. The run will be conducted on strictly technical lines and will be fully sanctioned by the Contest Board. Entry blanks have just been issued.

Gilbert Mfg. Co. Sues on Tire Case Patent

The Gilbert Manufacturing Company, of New Haven, Conn., has filed a bill of complaint in the Circuit Court of the United States against the B. E. Manufacturing Company, of New York City, asking for an injunction and an accounting.

Activity in Line of Shows Centers Attention

A. L. A. M. preparing vast quantities of lattice and 7,000 yards of carpet to floor the white and gold splendor of the Garden Exhibit. Nine more motor car manufacturers sign up for space in Palace show. Plans being formulated for automobile shows at the Importers' Salon, New York, at New Orleans, Cleveland, Omaha, Columbus, Milwaukee, Cincinnati, Pittsburg, Buffalo, Detroit and Los Angeles.

ACTIVITY in preparing for the A. L. A. M.'s coming Eleventh National Automobile Show at Madison Square Garden from January 7 to 21 is rampant. Two entire floors of an immense carpenter shop are being devoted to the manufacture of lattice for use in decorating. This will be used along the sides of the main hall. More of this type of fencing will be utilized at the show than ever before. In another department, dozens of men are busy cutting and sewing 7,000 yards of light green carpet which will be used to cover exhibition spaces on the main floor and elevated platform. The carpet is of special weave and will give the impression of the cars standing upon grassy lawns.

The color scheme of the decorations will be white and gold, shot and set off with green and crimson. It is estimated that 300 men are at work on the preliminary details.

Nine More Makers Sign for A.M.C.M.E.A.

The L. J. Bergdoll Motor Co. announces that it will exhibit a Colonial Coupe in dark wine color; a standard touring car; a fore-door touring car in Richelieu blue and a chassis at the A. M. C. M. E. A. exhibition at the Grand Central Palace, which opens New Year's eve. Among the other motor car manufacturers who have signed up for space at the Palace show are the following: Cass Motor Truck Co., Port Huron, Mich.; The Only Car Co.; Alpena Motor Car Co., Alpena, Mich.; Henry Motor Car Sales Co., Chicago; Correja Motor Car Co.; Gaylord Motor Car Co.; Otto F. Rost (Black Crow); Geneva Wagon Co., Geneva, N. Y., and Richard B. Dare (Cyklonette).

Importers' Salon Insures Foreign Show

At a final meeting of the companies that are interested in the exhibition of foreign automobiles in New York, a fund of $8,360 was subscribed and a permanent organization was formed. The first official act of the new concern was to close a lease of the big banquet hall of the Hotel Astor, in which the show will take place January 2-7, 1911.

The following companies were represented and will have space at the show: Panhard, Renault, Benz, Itala, De Dion-Bouton, C. G. V., Darracq, Isotta, S. P. O., Zust and S. B. A., a new car made in Belgium. Among the accessory and aeroplane motor companies that will exhibit are the Anzani and probably the Gnome companies. Burr & Co., carriages, have also taken space.

Columbus Club Looking for Exhibit Hall

COLUMBUS, O., Nov. 14—The show committee of the Columbus Automobile Club is busy in its efforts to secure a suitable hall for the purpose of giving the coming show. Considerable difficulty is encountered in the work of securing a hall which is sufficiently large.

Cleveland Club Adjusting Show Situation

CLEVELAND, Nov. 14—The directors of the Cleveland Automobile club will meet to-night to take up the local situation as regards the holding of an automobile show in Cleveland this Winter. As a result of disagreements among the dealers, the city had two shows last year, one under the auspices of the Cleveland Automobile Club and the other given by a faction of the dealers.

The directors of the automobile club will endeavor to bring all dealers into amicable relations this year with a view of effecting a combination of forces. Even if the directors are successful in this it is pointed out in some quarters that two shows will have to be given because of the lack of a hall big enough to house a show in which all dealers and all makers are represented. No dates have been set.

Milwaukee Dealers' Show Association

MILWAUKEE, Nov. 14—Milwaukee motor car dealers have revived the organization formed several years ago and a permanent association has been incorporated under the laws of Wisconsin. The name is Milwaukee Automobile Dealers' Association. There is no capital stock. One of the main purposes of the corporation is to conduct an annual motor show in Milwaukee. In February, 1910, when the Milwaukee Automobile Club held its second annual show, fourteen of the best known dealers in Milwaukee refused to join in the exhibition and held private shows in their garages. These dealers are the leaders in the new organization, the charter members of which are: The KisselKar Co., Frank J. Edwards, manager; Welch Bros. Motor Car Co.; Curtis Automobile Co.; Albert Smith; Jonas Automobile Co.; Hickman-Lauson-Diener Co.; Edgar F. Sanger Co.; Rambler Garage Co. of Milwaukee; Johnson-Burnham Sales Co.; American Automobile Co.; Bates-Odenbrett Auto Co. and the Kopmeier Motor Car Co. The membership fee is $250. A directorate of seven members has been elected as follows: Frank J. Edwards, the KisselKar Co.; Emil Estberg; Frank Hickman, Hickman-Lauson-Diener Co.; Clifford E. Golder, Curtis Automobile Co.; A. F. Timme, Kopmeier Motor Car Co. and H. B. Pruden.

Omaha Association Perfects Show Plans

OMAHA, Nov. 14—The Automobile Show Association has arranged to hold its Sixth Annual Automobile Show from February 20 to 25 inclusive. It will be held in the Omaha Auditorium. The show will be managed this year by Clarke G. Powell and Willard Hosford, who have managed the shows for the past three years.

Every dealer in Omaha belongs to the Association, and will exhibit at the show. The stage and boxes will be removed from the Auditorium, and by rearranging the space more room will be given than last year.

Detroit Dealers to Exhibit in January

DETROIT, Nov. 14—Plans are already under way for the Tenth Annual Automobile Show, to be held under the auspices of the Detroit Automobile Dealers' Association, January 16-21. As was the case for several years past, it will be held in the Wayne Hotel Gardens. Walter R. Wilmot, who was in charge of the automobile exposition at the State Fair, has been selected to manage the forthcoming show, which it is promised will in every way surpass its predecessors in splendor and in the number of exhibitors.

Los Angeles Show in Redwood Forest

Los Angeles, Nov. 14—The Licensed Motor Car Dealers' Association, of Los Angeles, will hold their Second Annual Show at Fiesta Park, December 24-31, 1910, except Sunday.

This show promises to surpass in magnitude and splendor the very successful exhibition of last year. It will be held at the same place, under a waterproof canvas canopy, covering 80,000 square feet of floor. The redwood forest idea will be repeated, and in addition to this beautiful feature, a cascade at the north end will supply a mountain brook, which will traverse the entire length—400 feet, terminating in a pool. A pumping plant will be installed to return the water to the cascade, with a capacity of 1800 gallons per minute. Twenty-five thousand 16-candle-power incandescent lights will set the beautiful scene in a blaze of light.

Thirty members of the licensed dealers' association will exhibit an aggregate of about 200 1911 models.

Cincinnati Club and Dealers Unite for Show

Cincinnati, O., Nov. 14—An agreement has just been reached between the Automobile Club of Cincinnati, and the Cincinnati Automobile Dealers' Association by which the Dealers' Association is to give the annual automobile show with the hearty moral support of the club. The retail dealers' association show committee, which is now making a canvass of the situation and expects to arrange dates for the latter part of February or the first part of March, consists of Edward Herschede, chairman; Harry T. Boulden, secretary; H. L. Leyman, R. C. Crowther, Frank H. Miller, W. G. Welbon, and Edward F. Kruse. Owing to the marked advance of the Queen City as an automobile center during the past year and the spirit of co-operation now existing on all sides the forthcoming event is expected to make a most creditable showing.

Two Exhibitions to Be Given at Pittsburgh

Pittsburgh, Nov. 14—A movement is on hand to have an independent automobile show next Spring. The Associated Automobile Dealers of Pittsburgh is the name of the organization which was formed at the meeting a few days ago to promote the show. Its officers are: J. Joe Feicht of the Liberty Automobile Co., president; Edward Bald of the Bald Motor Car Co., vice-president; James Kerr of the Kline-Kerr Motor Co., secretary; J. B. Howe, of the Pittsburgh Automobile Co., treasurer. Thirty-four members were enrolled and the building has already been secured for the show.

The 1911 show committee is making good progress in shaping up affairs for the fifth annual exhibition. The second week of the show will be the exhibition of motor trucks, motor boats, etc. and 12 dealers have already taken space for this event.

Bridgeport Dealers to Use Big Auditorium

Bridgeport, Conn., Nov. 15—The Bridgeport Automobile Dealers' Association announced to-day that a show would be held and plans are now under way to secure the Park City skating rink, one of the largest auditoriums in Bridgeport. No date has yet been set for the show. Bridgeport's first automobile show was held last March. Frank Rantz, president of the association, stated to-day that a meeting will be held next Tuesday evening at the Stratfield to fix upon the date of holding of the show. J. L. Bloomer, secretary of the association, is preparing for a vigorous campaign.

Buffalo Show to Be Held at Arsenal

Buffalo, Nov. 14—The annual automobile show will be held in the Broadway Arsenal during the week beginning Feb. 5, under the auspices of the Automobile Trade Association of Buffalo.

Plans for Crescent City Exhibition Formed

New Orleans, La., Nov. 14—A large automobile show, as compared to most local shows, will be held by the dealers of New Orleans under the auspices of the New Orleans Automobile Club, February 24, 25, 26 and 27, 1911. The show will be in conjunction with the third annual Mardi Gras Speed Carnival, but will open one day in advance and will be open the first two nights. Homer C. George will be general manager of the show and races, working in conjunction with a committee of three representing the exhibitors.

Upon the day of the announcement, twenty dealers signed applications for space, agreeing to exhibit cars. Each will be given a space 25 by 25 feet. Accessory exhibits will be half this size. The car exhibits will be placed in the enclosed betting ring under the steel grand stand at the Fair Grounds, while the accessories will be exhibited in the ladies' dining room.

The show will be under the special direction of the dealers' committee and will not be a money-making enterprise in any sense. If any money is realized from it, said money will go toward building a road, upon which work is now being done under the auspices of the Motor League.

Chicago's Exhibition Has Vast List

Chicago, Nov. 14—The demand for space at the Chicago show is greater than ever. For the first week, January 28 to February 4, there are a dozen or more makers of cars and more than fifty makers of accessories on the waiting list. A typical line of commercial cars will be shown from February 6 to 11, and the main floors of the Coliseum and Annex are practically full.

Following is a list of the commercial car makers who have contracted for space, to be supplemented later by several to whom allotments have been made but who have not yet completed the formalities: Mack Bros. Motor Car Co., Allentown, Pa.; Mais Motor Truck Co., Indianapolis, Ind.; U. S. Motor Truck Co ., Cincinnati, Ohio; Hart-Kraft Motor Co., York, Pa.; White Co., Cleveland, Ohio; Studebaker Bros. Mfg. Co., South Bend, Ind.; Alden Sampson Mfg. Co., Pittsfield, Mass.; Courier Car Co., Dayton, Ohio; W. H. McIntyre Co., Auburn, Ind.; Waverley Co., Indianapolis, Ind.; Reo Motor Car Co., Lansing, Mich.; Cartercar Co., Pontiac, Mich.; Grabowsky Power Wagon Co., Detroit, Mich.; Garford Co., Elyria, Ohio; Packard Motor Car Co., Detroit, Mich.; Avery Co., Peoria, Ill.; Pope Mfg. Co., Hartford, Conn.; Rapid Motor Vehicle Co., Pontiac, Mich.; Reliance Motor Truck Co., Owosso, Mich.; Peerless Motor Car Co., Cleveland, Ohio; American Locomotive Co., New York; Pierce-Arrow Motor Car Co., Buffalo, N. Y.; Metzger Motor Car Co., Detroit, Mich.; H. H. Franklin Mfg. Co., Syracuse, N. Y.; Knox Automobile Co., Springfield, Mass.; Kissel Motor Car Co., Hartford, Wis.; Kelley Motor Truck Co., Springfield, Ohio; Adams Bros. Co., Findlay, Ohio; Chase Motor Truck Co., Syracuse, N. Y.; Chicago Commercial Car Co., Chicago, Ill.; Lansden Co., Newark, N. J.; Federal Motor Truck Co., Detroit, Mich.; Automobile Maintenance & Mfg. Co., Chicago, Ill.; F. B. Stearns Co., Cleveland, Ohio; Economy Motor Car Co., Joliet, Ill.; Anderson Carriage Co., Detroit, Mich.; Marquette Motor Vehicle Co., Chicago, Ill.; Monitor Automobile Works, Janesville, Wis.; Clark Delivery Car Co., Chicago, Ill.; Schmidt Bros. Co., Chicago, Ill.; Brodesser Motor Truck Co., Milwaukee, Wis.

No Date or Place Yet for St. Louis Show

St. Louis, Mo., Nov. 14—At a meeting of the officers of the St. Louis Automobile Dealers' and Manufacturers' Association it was decided to leave the question of the 1911 show to the members. This action was taken because of the fact that opposition to the 1911 exhibit has developed. The same condition existed previous to the last show, but when it came to a vote an almost unanimous ballot was cast in favor of the proposition. The last show was held in the First Regiment Armory.

Olympia Automobile Show Opens in London

Olympia Show opens in London. Tendency of manufacture as shown in exhibits is toward smaller motors. Compactness and neatness in cylinder casting is a feature. Sixty per cent. of the automobiles shown are listed at less than $2,500, this includes, eight different makes of six-cylinder cars ranging up to 25 horsepower. Stroke of motor is longer in proportion to bore. Show is pronounced to be one of the most interesting ever held.

LONDON, Nov. 5—The motor show now in progress at Olympia is considered something of a step in advance as compared with any other show ever held in England. Space to exhibit was exhausted long before the show opened and the collection of automobiles on exhibition is one of the most interesting ever gathered under one roof.

The motors shown are generally smaller than they have been in the past; the horsepower being between 12 and 15, in a great number of instances. One of the first things that impresses the visitor, is the improvement in cylinder casting and design. The tendency is toward neatness and compactness and those concerns which adopted the plan last year of enclosing their valve stems, tappets, etc., have continued the practice, which goes a long way toward eliminating noise and excluding dust. The thermo-siphon system of water circulation which jumped into favor last year, is evidently holding its own.

More engine cylinders are cast en bloc this year than ever before and many new models are equipped with that type of cylinders.

Over 60 per cent. of the cars shown are listed at less than $2,500, even the six-cylinder cars of from 18 to 25 horsepower being so listed. Among the cars priced under that figure are the Arrol-Johnson, Daimler, Darracq, Fiat, Mors, Sunbeam, Clement-Talbot and Vauxhall all six-cylinder cars.

There is a tendency with small cars to rely upon ball bearings for crankshafts, but little success has followed the use of ball bearings in engines with bore of over 90 mm. The idea of equipping the car with only two ball bearings on the crankshaft has been tried to some extent in the current models, notably the Argyll. The worm drive, back axle, is slowly increasing in favor, half a dozen of the new models having been so equipped.

There seems to be a drift toward the adoption of a drive giving four forward speeds as opposed to three. The Wolseley Co. exhibits a gear box giving four and reverse, with direct drive on the fourth speed rather than the third, as heretofore. The Maudesley box gives direct drive on third with the fourth geared higher.

One of the chief developments of the year is the elongation of motor stroke with regard to the cylinder bore. The average of 14 typical makes of four-cylinder cars has been shown to be 3 1-4 by 4 13-16 inches.

The twin jet carbureter has made some advancement in popularity. The high tension system of ignition is practically universal, except where a dual system is used in cars of large power.

In the matter of engine lubrication the only novelty of any importance is the adjustable trough system, which while a clever idea does not seem to return sufficient advantage from its use to warrant the extra cost.

Clutches of all kinds are shown, including internal expanding, plate, leather-faced and metal to metal. The leather-faced clutch is maintaining its popularity and provision is generally made for smooth engagement by a series of springs under the leather facings. The hydraulic clutch is making no headway.

Frame design is very similar to last year, as finality in construction seems to have been reached in this line. The most general type of frame the side members are set in to give increased steering lock and are arched over the rear construction.

Front wheel brakes are growing in use on the higher priced cars, but on account of their more involved mechanism they are not likely to invade the field of the low priced lines.

The design of the rear axle, particularly as regards torque and radius rods, is the same as last year in almost all cases.

The chain drive is as dead as Queen Anne in the best known English makes, although the silent chain is creeping in for two to one shaft drive.

Among the accessories are shown several types of self-starters, one of which embodies the idea of an air compressor. Detachable wheels are shown in great variety.

Flush-sided bodies are shown in many lines, several makers having arranged the change speed lever within the frame to facilitate fitting on this popular style of body. Even in limousines and landaulets the current models show side doors attached to the front seats almost universally. In the matter of upholstering some of the ideas are novel. For instance, in the limousines it is not uncommon to find the bodies lined with wood in place of cloth. One line is displayed where the interiors are finished in the choicest tropical woods, comparable in pattern and workmanship with the best work of the cabinet-makers.

The Society of Automobile Engineers' Annual Meeting

NEW YORK, Nov. 16—Howard E. Coffin, president of the Society of Automobile Engineers, has announced that the annual meeting will be held in New York City on Wednesday and Thursday, January 11 and 12, 1911. The two days sessions will be devoted to the business of the Society and to technical subjects upon several of which papers will have been printed and distributed in advance of the meeting.

The work of the Society's standards committee is continuing actively; meetings of two divisions of this committee were held last week at the Society's New York office.

At the meeting of the plain, ball, and roller bearings division, the following were present: Henry Souther, Chairman Standards Committee; Henry Hess, Hess-Bright Mfg. Co.; A. P. Sloan, Jr., Hyatt Roller Bearing Co.; S. P. Wetherill, Jr., Wetherill Finished Castings Co.; Coker F. Clarkson, secretary.

At the meeting of the division on aluminum and copper alloys the following were present: Henry Souther, Chairman Standards Committee; Thomas J. Fay, Editor THE AUTOMOBILE; R. S. Fretz, Light Mfg. & Foundry Co.; H. W. Gillett, Aluminum Castings Co.; S. P. Wetherill, Jr., Wetherill Finished Castings Co.; Coker F. Clarkson, secretary.

General Motors New Board: Debts Paid

Responding to the instructions of the voting trustees, now in charge of the General Motors Co., a new board of directors has been chosen. It consists of the following: W. C. Durant, Anthony N. Brady, James J. Starrow, Albert Strauss, J. H. McClement, Nicholas L. Tilney, Richard Lukeman, Jr., Benj. F. McGuckin, H. L. Carlebach, Arthur P. Bush, Jr., and George Reichert.

All of the old board except Vice-President Durant failed of re-election. Anthony N. Brady, whose name is second on the list, has been financially interested in motor manufacture for some time and is connected with a number of prominent companies. James J. Starrow, represents Lee, Higginson and Co. and the others on the list represent various financial interests identified with the flotation of the $15,000,000 bond issue.

Announcement was made after the meeting that all matured obligations of General Motors had been taken care of and checks were being prepared for mailing.

Three Perfect Scores in C. M. C. Reliability Run

CHICAGO, Nov. 14—With a triple tie between a pair of Moline cars and a Fal, all of which finished the 1,000-mile reliability run of the Chicago Motor Club with perfect road and technical scores, the Van Sicklen Cup in the Roadster and Toy Tonneau divisions will be held by the Moline Auto Co. for eight months and by the Falcar Co. for four months. The Haynes entry was declared winner in the touring car division, with a penalization of two points for a loose bolt in the brake. This car is awarded the Stewart Speedometer Trophy. The team prize was won by the Moline pair, with perfect scores. The Standard Oil Trophy for economy in gasoline consumption was captured by the Cunningham, driven by J. C. Emery, using 83.80 gallons, the car weighing 2,930 pounds. The Falcar was second with an average of 17 miles to the gallon. The Michelin Tire Co. was awarded the Branstetter Cup with 15 points penalization.

The plan of holding the run was to send the cars over about 200 miles of varying roads each day for five days, the total mileage being about 1,050. The feature of the affair was the stability shown by the contesting cars and the excellent scores made by them. The technical examination to which they were subjected was severe and the fact that so many survived may be taken as proof of the good character of the competing automobiles.

The economy test proved illuminating as a measure of the cost of fuel and oil in touring under severe road and weather conditions. The clean scores registered in the roadster division of the tour were very creditable, as it scarcely seemed within the realm of possibility that no technical defects should be developed in such a hard test.

Tribune Trophy Goes to Chalmers

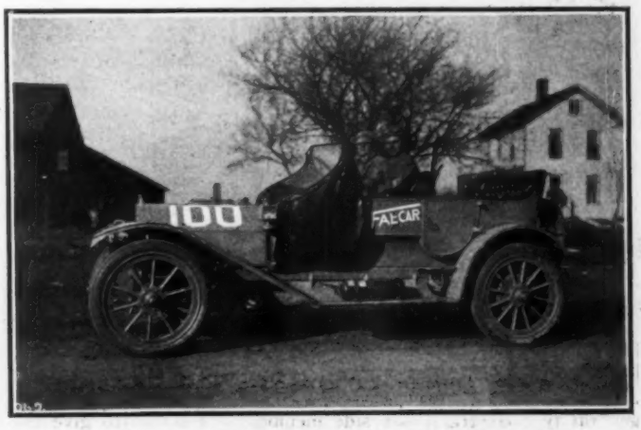
MINNEAPOLIS, MINN., Nov. 14—The Barclay Auto Company has become the permanent possessor of the Tribune Trophy through the decision of the trustees of the Automobile Club of Minneapolis. The Chambers "30" had finished the three contests with the best average score, as provided by the rules made in 1908.

Upon being informed of the club's action, Mr. Barclay immediately arranged a banquet to fittingly celebrate the disposal of the trophy.

TABLE SHOWING PERFORMANCE OF CONTESTANTS IN C. M. C. RELIABILITY RUN—TOURING CAR DIVISION

		ROAD SCORES											FINAL EXAMINATION												ECON. COMPETITION		
													Brake Tests														
Car No.	Car	1st Day Time	1st Day Tech.	2nd Day Time	2nd Day Tech.	3rd Day Time	3rd Day Tech.	4th Day Time	4th Day Tech.	5th Day Time	5th Day Tech.	Total Road Score	Service	Emerg.	Total Brakes	Total Clutch	Engine	Cooling	Lubr.	Carb.	Ing.	Mach. Parts	Running Gear	Grand Total Tech. & Time Pen'l	Gas. in Gals.	Car Wgt.	Pctg.
7	Haynes	0	0	0	0	0	0	0	0	0	0	0	48ft.	45ft.	0	0	0	0	0	0	0	0	2	2	88.20	3590	.317
9	Imperial	0	0	0	0	0	0	0	0	0	0	0	34	44	0	0	0	3	0	0	0	0	2	5	87.30	3560	.318
8	Henry	0	0	0	0	0	0	0	0	0	0	0	42	40	0	0	0	0	0	0	0	0	6	6	81.70	3710	.354
12	Cino	0	0	0	0	0	0	0	0	0	0	0	33	57	7	0	0	1	0	0	5	0	0	13	88.85	4000	.351
4	Cunningham	0	0	0	1	0	0	0	0	0	0	1	42	65	15	0	0	0	0	0	0	0	7	23	83.80	2930	.459
11	Abbott-Detroit	0	1	0	0	0	0	0	0	0	0	1	66	55	21	0	0	1	0	0	0	0	12	35	78.00	3430	.343
1	Abbott-Detroit	0	3	0	0	0	0	0	0	0	0	3	68	52	20	0	0	0	0	0	0	0	18	41	84.85	3410	.313
6	Halladay	0	0	0	0	0	52	0	0	0	5	57	42	43	0	0	0	0	0	0	0	2	6	65	95.25	3950	.323
10	Glide	0	0	0	66	0	0	0	0	0	0	66	70	63	33	0	0	2	0	0	10	276	11	398	.....	....	....
2	Haynes	0	0	0	0	0	0	0	35	0	0	35															
		ROADSTER DIVISION																									
100	Falcar	0	0	0	0	0	0	0	0	0	0	0	37	41	0	0	0	0	0	0	0	0	0	0	60.00	3269	.425
104	Moline	0	0	0	0	0	0	0	0	0	0	0	37	41	0	0	0	0	0	0	0	0	0	0	70.40	3550	.393
106	Moline	0	0	0	0	0	0	0	0	0	0	0	35	40	0	0	0	0	0	0	0	0	0	0	65.85	3210	.3808
117	Haynes	0	0	0	0	0	0	0	0	0	0	0	43	50	0	0	0	0	0	0	0	0	1	1	73.90	3170	.335
112	Staver	0	0	0	0	0	0	0	0	0	0	0	42	50	0	0	1	0	0	0	0	0	1	2	75.10	3040	.316
113	Staver	0	0	0	0	0	0	0	0	0	0	0	30	40	0	0	0	0	0	0	0	0	6	6	69.25	3040	.342
105	Lion	0	0	0	0	0	0	0	0	0	0	0	55	45	5	5	0	0	0	0	0	0	1	11	86.75	3590	.323
101	Midland	0	0	0	2	0	0	0	0	0	1	3	47	43	0	0	0	0	0	0	0	0	10	13	80.00	3680	.358
111	Halladay	0	0	0	0	0	0	0	0	0	0	0	37	38	0	0	0	3	0	0	10	0	12	25	76.25	2540	.260
108	Imperial	0	0	0	0	4	10	0	0	0	2	16	50	56	6	0	0	0	0	0	4	0	5	31	67.60	3070	.354
102	Grout	0	0	0	0	0	0	0	0	0	0	0	75	47	25	5	8	1	0	0	0	0	0	39	81.25	3960	.3807
119	Moline	0	0	0	0	0	0	0	35	0	0	35	36	45	0	0	0	5	0	0	0	0	26	66	76.40	3590	.317
107	Case	0	0	0	0	0	0	0	0	22	50	72	73	48	23	0	0	0	0	0	0	0	7	102	107.10	3630	.264
110	Speedwell	0	0	0	0	0	0	0	0	0	0	0	44	160	110	0	0	0	0	0	5	0	2	117	107.00	3510	.256
116	Brush	0	0	0	8	0	0	0	1	Withdrawn.																	
103	Hup	0	1	0	0	0	20	Withdrawn.																			
115	Krit	0	0	Withdrawn.																							
114	Case	0	50	Withdrawn.																							
118	Hup	Withdrawn.																									
109	Hup	Did not start.																									

Moline, No. 104, came through with a clean score



Falcar, No. 100, also ended with a clean score

News Notes from Hoosier Capital

INDIANAPOLIS, IND., Nov. 14—Many new companies are being formed with the expectation of getting in line for the 1911 season, and some important changes in agencies are resulting. Among the most important changes is that of the Premier agency from the Gibson Automobile Co. to the Premier Motor Sales Co. with Henry L. Johnson, formerly of the Boston Premier branch, as manager. The new company will distribute the Premier throughout the State.

The Marion Sales Co. has also been formed to act as general distributor for the Marion, which is to be manufactured on an extensive scale, during the coming season. Those interested in the company are: E. A. Brown, James E. Kepperley and J. O. Vanier. The Marion will be built in two chassis types, with a choice of a large variety of bodies, ranging from roadsters to taxicabs.

About 300 employees of the Overland factory in this city were entertained at a theater party last Monday night by Will H. Brown, vice-president of the company. Before the performance the Overland factory band gave a concert.

New Company to Make Automobiles

BUCYRUS, O., Nov. 14—The incorporation of the Sommer Motor Co., of this place, recently, with an authorized capital of $125,000 means the erection of a large plant for the manufacture of the Sommer automobile, which has been made on a small scale at this place for several months. The charter of the corporation permits the company to manufacture and sell automobiles, motor trucks, and other vehicles as well as automobile supplies and accessories in general.

The incorporators were: L. A. Sommer, who will be president and general manager of the corporation; L. M. Smith, F. C. Hopley, S. S. White and D. F. Flohn. Active preparations are being made for the location of the factory.

Auto Refrigerator Offers Advantages

The auto refrigerator car shown in the accompanying illustration is utilized for transporting beef at Buenos Ayres by the Compania Sansinena Carniceria "Na Negra" de Carnes Congeladas. It is capable of handling 4,500 kilograms of meat in each load and is operated by a 35-horsepower motor of the four-cylinder type constructed at Puteaux - on - the - Seine, and is of the De Dion - Bouton type. The motor ice truck noted in the accompanying illustration is provided with a similar four-cylinder motor of 24-horsepower capacity; the cylinders of this engine have a bore of 104 mm. and a stroke of 130 mm., and the truck is arranged for three speeds forward and one reverse. This new motor truck has a capacity for handling 3,000 kilograms of ice in each load.

Automobile refrigerator car in Buenos Ayres

United International Motors Makes Its Bow

Benjamin Briscoe's trip abroad is already bearing fruit and the United International Motors, Limited, affiliated with the United States Motor Co. and representing that corporation in England, has made an auspicious début. United International Motors has obtained a concession from United States Motor Co. to manufacture and sell in the United Kingdom and continental Europe the various types of cars made by the American company. A staff of representative Britons has been assembled and the announcement has been made that it is the intention of the company to install a manufacturing department in full cooperation with the American plants. A guarantee for four years is given to all purchasers. The Brush, Maxwell, Stoddard-Dayton and Columbia types are specially emphasized. The new company has secured temporary quarters and is showing fifteen models.

Annual Election of A.A.A. Last of Month

The annual meeting of the American Automobile Association will be held November 30 and December 1, when the election of officials will take place. There has been the usual grist of rumors about radical changes in the make-up of the slate and indications point to the election of Vice-President Hooper of Philadelphia as president of the association. The groundwork of the Contest Board apparently will remain without revolutionary change although a number of officials now connected with it are likely to be switched about. The composition of the Technical Committee is arousing considerable comment. The opinion is expressed that it is likely to remain about the same as in the past season. Chairman S. M. Butler will stay at the head of the Contest Board.

Carples Resigns as Manager N. Y. Dealers

James M. Carples, general manager of the Licensed Automobile Dealers of New York, has placed his resignation in the hands of the Executive Committee, announcing that his new duties as general manager of the Daimler Import Co., who will handle Mercedes cars in America, made it impossible for him to continue as general manager of the Licensed Automobile Dealers.

Mr. Carples' successor has not as yet been chosen.

R. H. Johnson and J. M. Uppercu have been chosen members of the Board of Directors of the association.

Syracuse Club Points Out Auto Route

SYRACUSE, N. Y., Nov. 14—Notice has been received by The Automobile Club of Syracuse that since Nov. 5 the ferry from Cayuga to Seneca Falls has been discontinued. The road across the marshes at Free Bridge will be kept open and passable through the winter, which is welcome news to automobilists of this section that like to use their machines during that season.

Tourists going west from Auburn have been directed to follow the macadam on Clark street to Free Bridge, cross the marshes and take the second left turn into Seneca Falls. Going east through Seneca Falls, they are to turn left into Cayuga street and take the right fork to Free Bridge.

Ryan Head of Aero Club of America

Allan A. Ryan and his whole ticket were elected to administer the affairs of the Aero Club of America. The insurgent movement that was projected after the recent meeting at Belmont Park did not materialize. No formal announcement was made by the club as to action in the case of Drexel and other malcontents.

Don't try to accomplish a life's work in a day; constant washing wears away the hardest stone; wash, brother, wash.

Boston Truck Dealers for Organization

BOSTON, MASS., Nov. 5—At a meeting of a number of dealers connected with the Boston Automobile Dealers' Association, who handle commercial vehicles in addition to pleasure cars, an organization was formed, known as the Boston Motor Truck Association. The organization will start in at once to push commercial vehicles and in the future will have shows, endurance runs and reliability contests of various kinds.

Officers were chosen as follows: J. W. Maguire, Pierce-Arrow, president; A. P. Underhill, Knox, vice-president; J. S. Hathaway, White, treasurer; Chester I. Campbell, secretary; board of directors, the above officers and A. B. Henley, Franklin; Victor A. Charles, Inter-State; L. B. Butler, Rapid and C. F. Whitney, Alco and Stoddard-Dayton.

The advisability of having a show for commercial vehicles solely, this season, was discussed and it was decided that the plans could not be matured sufficiently without interfering with the arrangements for the regular motor show next March.

Windshields in United Manufacturers

Rumors that told of the dissolution of the United Manufacturers, which handles the Jones Speedometer, Motorol, Metzger windshield, ignition specialities and the Weed chain, and the erection in its place of a merger of various windshield companies prove to have little foundation in fact. The situation as far as it has developed indicates that, instead of dissolving, the United Manufacturers is planning considerable accessions to its lines.

It may be said with semi-official certainty that the company contemplates continuing in business. A plan is under way to bring several important manufacturers of windshields into the company. Announcement of the details will be made in due course.

L.I.A.C. To Be Ten Years Old Next Month

With much ceremony and rejoicing the Long Island Automobile Club will celebrate its tenth anniversary Dec. 7. The ample club house at 920 Union street will be the scene of a feast, entertainment and a meeting to commemorate the occasion.

The club has had a prosperous year and its size and importance have increased largely. Its club runs and competitive tours have proved a distinct addition to the pleasure of motoring.

Automobilists Satisfied with Election

While the storm of ballots raged last week something happened that will probably prove of benefit as well as interest to motordom. Among those who were not selected to make laws and administer them were the New Jersey legislators who were instrumental in framing the sumptuary law now on the statute book of New Jersey, which oppresses visiting automobilists and is a standing reproach to the fair name of the State. New Jersey roads are proverbially excellent, but the existing statute has proved so obnoxious to motordom generally that reprisal legislation has been passed by neighboring States against the Jerseymen. The associated automobile clubs of New Jersey realized that this condition was wrong and for months before election the members labored diligently to secure pledges from candidates of both parties to correct the legal situation.

As a result, the legislature chosen in Jersey on Tuesday is formed of men who have given their words of honor to change the burdensome and unjust law.

In New York State it may be noted incidentally that Samuel S. Koenig, Secretary of State, who was very active in the administration of the laughable Callan Act, and Albert S. Callan, the youthful Assemblyman from Columbia County, who was the titular father of the State motor law, are numbered among those who fell.

Road Builders to Confer for Four Days

INDIANAPOLIS, Nov. 14—Four days will be devoted to the study of road problems by the American Road Builders' Association at a convention to be held at Indianapolis, Dec. 6-9. Extensive preparations are being made for this conclave and the hope for State aid and State control of highways in Indiana hinges largely upon the automobile owners.

The Indianapolis Trade Association, with the aid of such men as Carl G. Fisher, president of the Indianapolis Motor Speedway, and Will H. Brown, vice-president of the Willys-Overland Co., is seeking the active support of every owner of a motor car in the State.

Detroit Favors $2,000,000 Road Bonds

DETROIT, MICH., Nov. 14—That the people of this community are fully awake to the advantages of good roads was demonstrated in the election of last Tuesday, when the proposition to bond Wayne county for $2,000,000 for road building purposes carried by a large majority. It served to show what a powerful force the motor car industry has become here, for the united support and co-operation of these interests were important factors in the success of the issue.

State Senator John N. Anhut, who was formerly actively connected with the industry as president of the Anhut Motor Car Co., now the Barnes, was defeated by his Democratic opponent, James H. Lee.

Reciprocity with Canada for Automobiles

Negotiations are being conducted between the authorities of Canada and the United States looking to a reciprocal arrangement of customs with regard to the introduction of automobiles from one country into the other. Officials of both nations are being strongly urged to reach an agreement by representatives of motordom on both sides of the line.

Nullifying Grade-Crossing Perils

Quite an advancement in the art of protecting grade crossings has been made by the Lehigh Valley and installed on one or two dangerous intersections of highways with the railroad right-of-way.

As shown in the accompanying illustration, the warning signal is substantially built upon a column of perhaps 15 feet high. For use in the day, the signal bears the caution: "Railroad Crossing. Danger. Do not cross when Red." An electrically operated gong also gives audible warning of danger. At night the signal shows a red light when a train is approaching the crossing and the bell also gives voice.

How the Lehigh Valley Railroad proposes to protect dangerous crossings

News of the Detroit Field

TWO MOTOR CLUBS MERGE AND HENCEFORTH WILL BE KNOWN AS THE WOLVERINE AUTOMOBILE CLUB—NOTES OF THE TRADE

DETROIT, Nov. 14—The Stanley Motor Car Co. has begun operations here making the Stanley "30" and the Stanley "40," selling at $1,450 and $2,000, respectively. The company is located temporarily at 315 Howard street and two cars have been turned out. From now on the concern expects to turn out one car a day and the product will be marketed principally in the West. The officer are: President, G. S. Murdock; secretary-treasurer, A. A. Savois; general manager, F. E. Gibbard.

An interesting bit of news to local autoists was the announcement that the Detroit Motor Club and the Wolverine Automobile Club had decided to consolidate, the name of the latter being retained. Committees from the two organizations have been at work on the matter for some little time and the details have just been completed. The combined membership is about 600, which, it is expected, will be increased to 1,000. Secretary F. H. Trego and Assistant Secretary W. O. Peck have established temporary offices at 1215 Woodward avenue. The club plans to erect one of the finest club houses in this section of the country.

William F. Cornell, of the Detroit Motor Car Supply Company, has been elected president of the Detroit Rotary Club, a new organization representing forty-five business and manufacturing concerns of Detroit with an investment of more than $7,000,000.

Mayor Philip Breitmeyer, who retires from office January 1, and his secretary, Frederick A. Van Fleet, are president and secretary-treasurer, respectively, of the Wolverine Motor Supplies Company, which has filed articles of association at Lansing and has already commenced operations at 1221 Woodward avenue. The company's principal output for the present will be the Detroit spark plug, invented by Theodore L. Beguhn. It differs widely from the ordinary spark plug in that mica washers take the place of the customary wire points for sparking purposes. Frank W. Kanter is vice-president of the company and George W. Stimpson is factory manager. John Gillespie, of the Gillespie Auto Sales Company, is also interested in the new venture.

Following the recent annual meeting of the Warren Motor Car Company General Manager J. C. Bayerline has announced that the capital stock of the concern has been increased from $100,000 to $300,000. Whether this means a stock dividend or a further enlargement of the company's facilities is not made known.

The Hupp Motor Car Company has announced that its new four-passenger touring car at $900 as well as its other 1911 models, including the runabout, a coupé and a torpedo, are ready for the market.

The Board of Commerce is doing some effective campaigning on behalf of its good roads bonding project. George S. Ladd, former master of the Massachusetts State Grange and now lecturer for the National Grange, is delivering a series of good roads talks here under the auspices of the board.

Roy Buell, who has been connected with the publicity department of the Regal Motor Car Company, has been promoted to the position of advertising manager. Mr. Buell is an ex-newspaper man. He went to the Regal company from the Associated Press.

Rothschild & Co., Body Makers, Fail

Bankruptcy proceedings were commenced Monday against Rothschild & Company, manufacturers of automobile bodies at 550 West Fifty-seventh street, New York City. Lillian H. Mendel, of Mount Vernon, and several other creditors instituted the proceedings. Federal Judge Hough named Charles Singer receiver under $5,000 bonds and authorized him to continue the business for ten days.

Liabilities are estimated at $100,000 and the schedule of assets foots up about $30,000. The company has on hand about $50,000 in contracts and the work of the receiver will be to fill as many as possible during his tenure of office. The company was formed in 1906 with capital of $35,000. This was increased subsequently to $200,000.

Auto and Airship Neglected by Military

Possibility of war between the United States and Japan, the readiness of the Japanese and the unpreparedness for such a development in the United States are being discussed with much freedom in European military circles, according to H. H. Rogers, son of the late Standard Oil magnate, who returned recently from across the Atlantic.

In speaking of this talk, Mr. Rogers said: "High military officers are unanimous that the war will come about within a few years, surely before the opening of the Panama Canal, and that America will be whipped just as Russia was."

Such reports, coming as they do from sources that should be well informed, carry a certain amount of force that the ordinary traveler's tale does not possess.

History clearly shows that in armed struggle the side which is able to mobilize its forces with the most facility and to determine the intentions of the enemy always wins. Napoleon said that Providence was on the side which had the heaviest batallions, but his practice showed that he did not believe in trusting to Providence alone. It was his plan to discover the intentions of the enemy and to "beat him to it," by engaging him with heavier forces than he could bring to bear upon a given crucial point.

All of which goes to show the importance of swift mobilization. In this age of the automobile and aeroplane as existing military forces the neglect of them by the United States Government is inexplicable. In case of war with Japan the problem presented to the army and navy would be one of swift assembly of fighting force at the point of attack. Those who have taken the pains to investigate the situation at all are agreed that there should be a board of automobile engineers installed at once co-ordinate with or superior to the general staff of the army and that a similar body of aeronautical engineers should be charged with the task of preparing a defense of the country by airships.

The palpable neglect of these two important elements of defense might lead to a very black page in American history.

Goes to Paris to See Long-Stroke Motors

Eugene Grenwauld, superintendent of the Moline Automobile factories sailed Tuesday from New York for the Paris Auto Show. The Moline Co. expects to get some ideas from inspection of the foreign exhibits at the Paris show, especially with respect to long stroke motors. The 1911 Moline motor is of the long stroke type, being 4-inch bore and 6-inch stroke.

Among the Accessory Makers

SHORT NEWS; SCHEBLER CARBURETER AND METHODS OF MANUFACTURE; ACTIVITIES OF ACCESSORY MAKERS AND OTHER ITEMS

—J. E. Strater has opened a branch office in Cincinnati for the Hoffecker speedometer and the Flentz shock absorber.

—J. C. Irwin has resigned his position as Wisconsin representative for the Firestone Tire & Rubber Company, of Akron, Ohio.

—Ground has been broken for the new Vulcan gear works, at Pontiac, Mich., one of the four new factories which are to be erected there.

—Wiley F. West has been appointed manager of the St. Louis branch of the Firestone Tire & Rubber Company. He comes from Atlanta, Ga.

—The Booth Demountable Rim Company has removed its general offices to 8410 Lake avenue, Cleveland, Ohio, where its factory is located.

—Truffault-Hartford shock absorbers will be used to equip Oldsmobile "Limited" and "Autocrat" models of 1911 and upon all Rambler cars.

—William Smith, former treasurer of the Lyric Theater of Cincinnati, now represents the Michelin Tire Co., in Ohio, Indiana and Kentucky.

—The Pennsylvania Rubber Company has appointed the Post & Lester Company, Boston, Mass., agents for Boston and vicinity, covering its automobile tires.

—E. J. Benson, who has been with the B. F. Goodrich Co., Detroit, for seven years, has joined the selling force of the Pennsylvania Rubber Co.

—W. A. Merriam has been appointed advertising manager of the Warner Instrument Company, and will conduct that feature of the business from the Boston office after December 1.

—The Badger Auto Tire Repair Company of Milwaukee, Wis., has moved to larger quarters at 132 Oneida street. V. A. Massee is manager. The company will handle the Kelly-Springfield tires in this territory.

—The J. S. Bretz Company has opened a western office and salesroom at 1215 Woodward avenue, Detroit. H. J. Porter and J. W. Hertzler, the western sales representatives of the company, will make it their headquarters.

—In calling attention to the application of a dynamo for lighting in an article which appeared on page 661 of THE AUTOMOBILE, it was stated that the dynamo used was an Apple. After investigation showed that it was an Applco.

—Charles W. Simpson has assumed the management of the Diamond Rubber Co.'s Cincinnati branch office and store at 807-809 Race street, succeeding E. B. Tozier, who has been appointed manager of the Diamond Co.'s branch at Minneapolis.

—Papers were filed with Secretary of State Thompson recently by the B. F. Goodrich Company, of Akron, Ohio, increasing its capital stock from $10,000,000 to $20,000,000. The increased capitalization will consist of 7 per cent. preferred stock.

—The following named concerns have been elected to membership in the Motor and Accessory Manufacturers' Association: Edison Storage Battery Co., West Orange, N. J.; The McCue Co., Hartford, Conn.; Pfanstiehl Electrical Laboratory, North Chicago.

—George B. Gaylord, formerly assistant to the general manager of the Buick Motor Company, at Flint, Mich., will hereafter have charge of the accessories and parts department of the Minneapolis Regal Auto Company. Mr. Gaylord assumed his new duties last week.

—George A. Wallace, of New Castle, Pa., is at the head of a big company composed of New Castle and Cleveland capitalists which has bought a site in Youngstown, O., for $300,000, on which it proposes to build a $2,000,000 plant. It is reported that automobile parts will be manufactured.

—Chase Langmaid, manager of the Hartford Rubber Works Company's Boston branch, announces its removal to the new building at 863 Boylston street. The five-story building is occupied entirely by the Hartford Rubber Works Company and has every convenience and facility.

—The Hollis Electric Company, jobbers' and manufacturers' agents, now located at 9 North Sixth street, Minneapolis, Minn., has just signed a long time lease for a building to be erected at No. 12 South Eighth street, just off Hennepin avenue, in the heart of the automobile section. The building is to be completed by February 1.

—Fred Helser, formerly with the Black-Crow Motor Car Company, and his father, Jesse Helser, of Warsaw, have formed a partnership under the firm name of the Helser Sheet Metal Specialty Company, and have opened a shop at 123 North Main street, Elkhart, Indiana. The output of the firm will be sheet metal parts for automobiles, including fenders, tanks and fixtures.

—The Archer Automobile Association, of Burlington, Vt., have applied for patents on a new style of clutch. It is cone shaped, and consists of one transmission member and two engine members, one of which applies friction to the outside and the other to the inside of the transmission member, and which will be fitted with leather, cork or asbestos, for various purposes. If desired they may be so arranged that one surface engages earlier than the other, so as to pick up the load without shock.

Making Schebler Carbureters

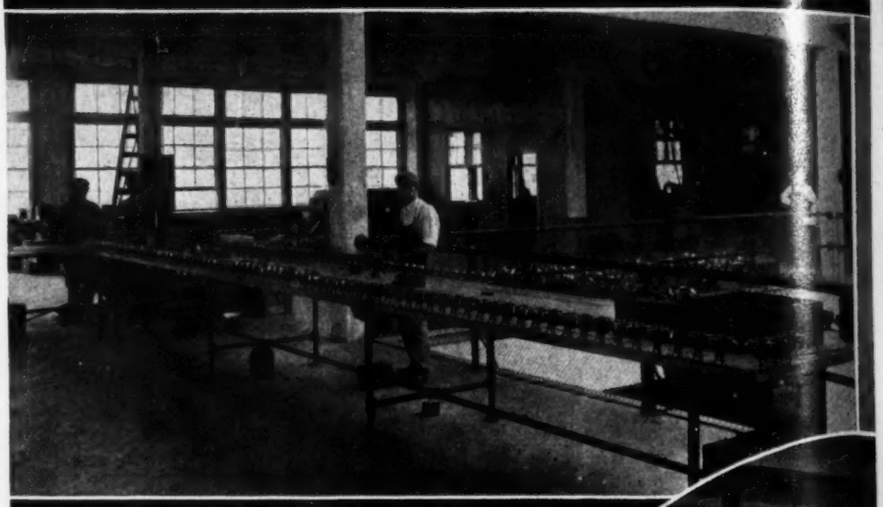
ILLUSTRATING THE VARIOUS TYPES OF SCHEBLER CARBURETERS; SHOWING METHODS OF MANUFACTURE; DEPICTING TESTING EQUIPMENT AND RAMIFICATIONS

GAUGING the automobile industry is to some extent accomplished by counting the number of carbureters that are being turned out, remembering that every motor used requires its carbureter. Without trying to show as whether or not each of the makes of carbureters has been manufactured on the same increasing basis year after year, the point will be made that the Schebler carbureter as manufactured by Wheeler & Schebler, of Indianapolis, Ind., has been turned out in increasing numbers as indicated by the statistical schedule as follows:

ANNUAL PRODUCTION OF SCHEBLER CARBURETERS

Year	Carbureters
1906	1
1907	48,625
1908	57,513
1909	100,000
1910	200,000
1911 (capacity)	4,000 per day

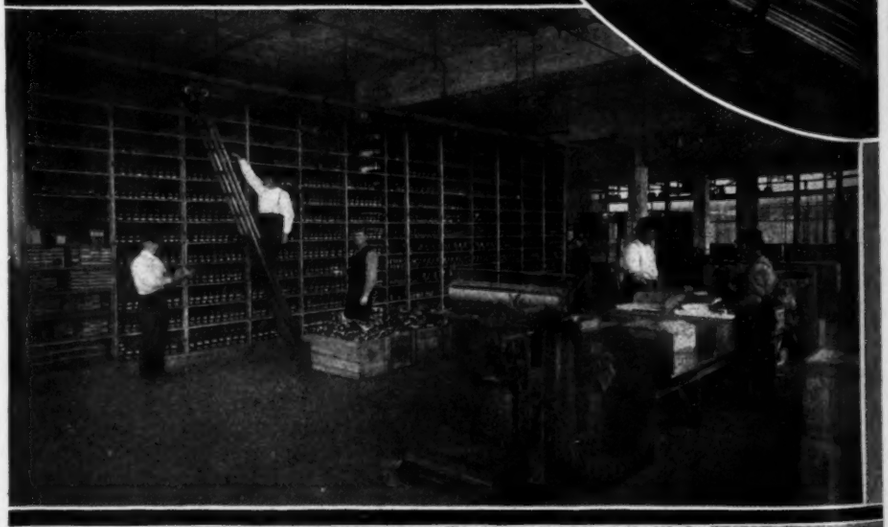
The first carbureter as invented by George M. Schebler was put out in 1900. A little later on, when the firm of Wheeler & Schebler was formed, the carbureter was somewhat improved, and the company went ahead with its manufacture on a modest basis, leading up to the 1907 output, which, at that time, was considered an enormous production. One of the basic reasons for the enormous advance in the production of carbureters at this plant is attributed to the consistent policy of Frank H. Wheeler, resulting in the continuous running of the plant, day in and day out, rain or shine, panic or no panic. When, during the 1907 panic, nearly every industrial establishment was either shut down or running on part time, Frank H. Wheeler kept his men at the bench and tools, turning out 48,600 carbureters, accumulating a stock of 24,000 carbureters, against the advice of every half-scared wiseacre in Indianapolis and for 100 miles around. One day, when business awakened, and manufacturers of automobiles made the discovery that carbureters were on a famine basis, promises were to be had a-plenty, but of carbureters there were none. This was Frank H. Wheeler's opportunity. In response to a telegram from the management of one of the big manufacturing companies Wheeler said: "Will ship a carload of carbureters to-day." The answer came back: "Do your damnedest." When the freight car was shunted off the siding that night it carried within a bakers' dozen of 5,000 carbureters. It was only a matter of a few days when the entire 24,000 carbureters were ordered and delivered, and it established the reputation of Wheeler & Schebler for promptness in making deliver-



Showing Rows of Float Bowls on the Testing Benches Having the Buoyancy of the Floats Determined

Part of the Space Devoted to Testing, Showing Lots of Model L & F Carbureters Undergoing Final Inspection

Battery of Multiple Spindle Out Screws and



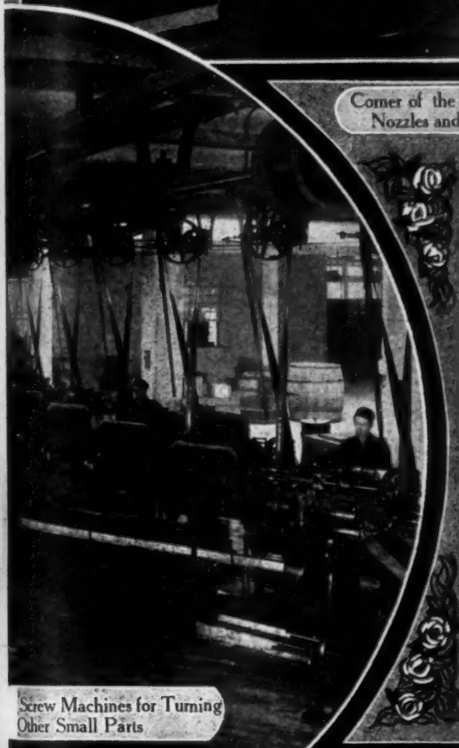
Stock and Shipping Room, Showing Carbureters on Shelves Representing Stock and Boxes on the Shipping Table Ready to Go Out

Corner of the Watch Lathe Department Where Needle Valves, Nozzles and Other Small Parts are Made to Great Accuracy

ies, made it perfectly plain to manufacturers that the quality would be the same for a single carbureter or a carload; and Wheeler & Schebler have been busy ever since maintaining this reputation. Since the plant was discussed in THE AUTOMOBILE last year, the foundry capacity has been doubled, which means that the raw material used therein is on a basis as follows:

New copper... 4 carloads per month.
Block tin..... 12 tons per month.
Pig lead..... 4 tons per month.
Spelter ..... 2 tons per month.

The floor space of the plant, as previously reported, is about 150,000 square feet. This floor space has been added to this year, making the total at the present time 300,000 square feet. Under the old conditions 500 men were kept continuously employed in the production of carbureters,



Screw Machines for Turning Other Small Parts

Dipping Room, Where the Float Bowls and Other Castings are Finished by Dipping After They Pass From the Sand Blast Department

General View of Assembling Room, Showing the Systematic Lay-Out in Order to Secure Rapidity and Precision

but this labor list is being rapidly swelled, it being the idea to have a pay-roll of 1,500 men by the first of the year.

Types of Carbureters Being Turned Out

The regular output of the plant is divided into five types of carbureters, known as models H, D, E, L and F, all of which are shown herewith. Fig. 1 shows the testing rack with rows of float bowls with floats in place for the purpose of observing the buoyancy of the floats, and the tightness of the bowls and the fittings. The floats are made of the finest selection of Spanish cork, which, after being fastened into place, is given a suitable coating of the best grade of shellac, and in this test each carbureter is examined in order to note if the cork is of the right buoyancy and whether or not the coating of shellac is complete.

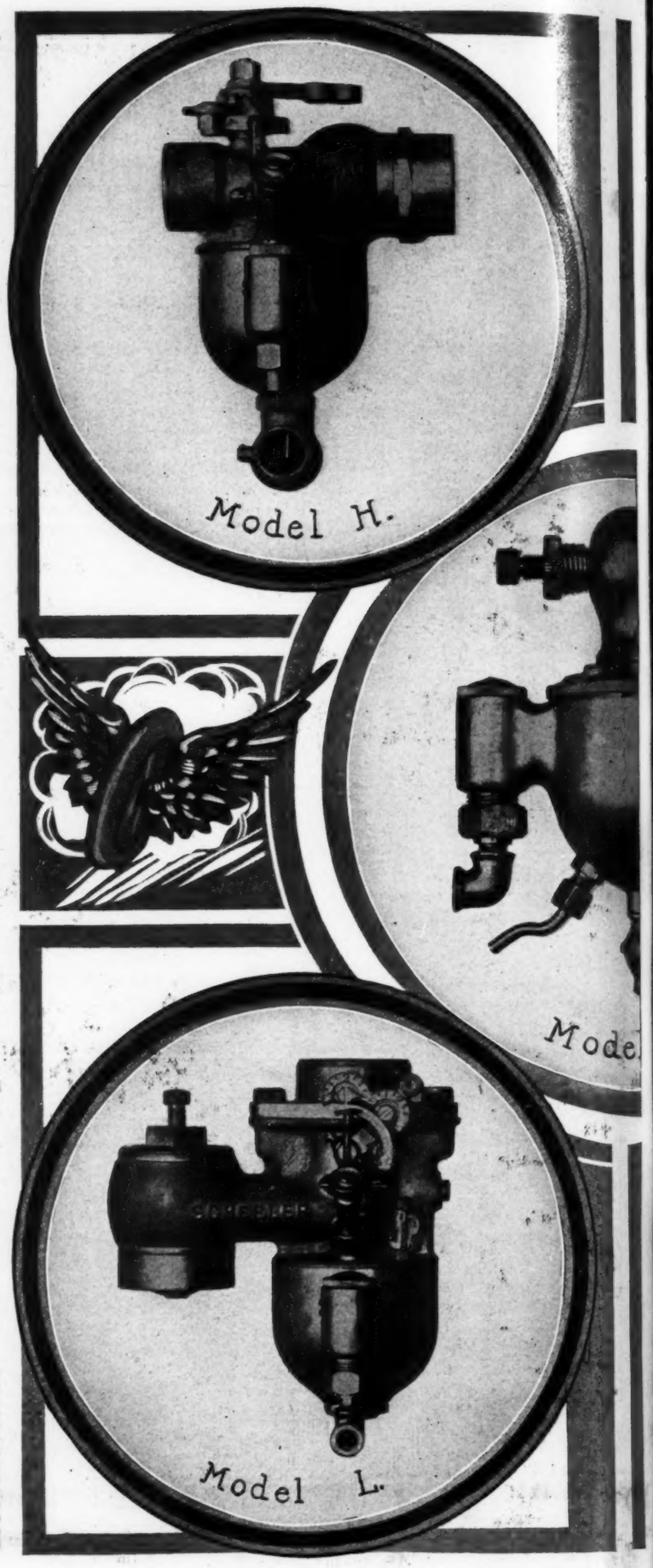
It has been found in practice that the best grades of cork are impervious to the gasoline, excepting to a very slight extent, and this tendency to absorb the liquid is entirely offset if a proper grade of shellac is used as a coating, provided it is applied in the most efficacious way.

Fig. 2 shows the final inspection system, with Model L and F carbureters being put through. In this test the inspectors are instructed to examine every part with the utmost care, make comparisons with suitable standards, and decide with great definiteness as to whether or not the carbureters are good enough to be boxed and shipped with the assurance that they will be satisfactory to the purchaser and capable of maintaining the established reputation of the maker. After the carbureters are given the final inspection, they are forwarded to the stock and shipping department, as shown in Fig. 3, where they are properly scheduled and either boxed for immediate shipment or stored on shelves for stock.

An Undertaking with Many Details Thrown In

Thus far no attempt has been made to indicate the extent to which the manufacture of carbureters involves precise and almost innumerable details. Fig. 4 shows the screw machine department with two batteries of multiple spindle screw machines that are used and continuously operated in the production of screws and small parts as used in the carbureters. Two years ago the company purchased these small parts as screws, etc., and while it was found that the prices were low enough the fact remained that deliveries could not be depended upon, and the quality of the commercial product was far from uniform. Disregarding, for the time being, the question of the market, it was decided to install these screw machines, taking advantage of the better quality, and protecting the customers against a famine of material of this character. It was found in the long run that the better quality of product turned out effected a saving in other ways that fully compensated for the increased cost of raw material and the overhead charges involved in the installation of a screw machine department on this enormous scale.

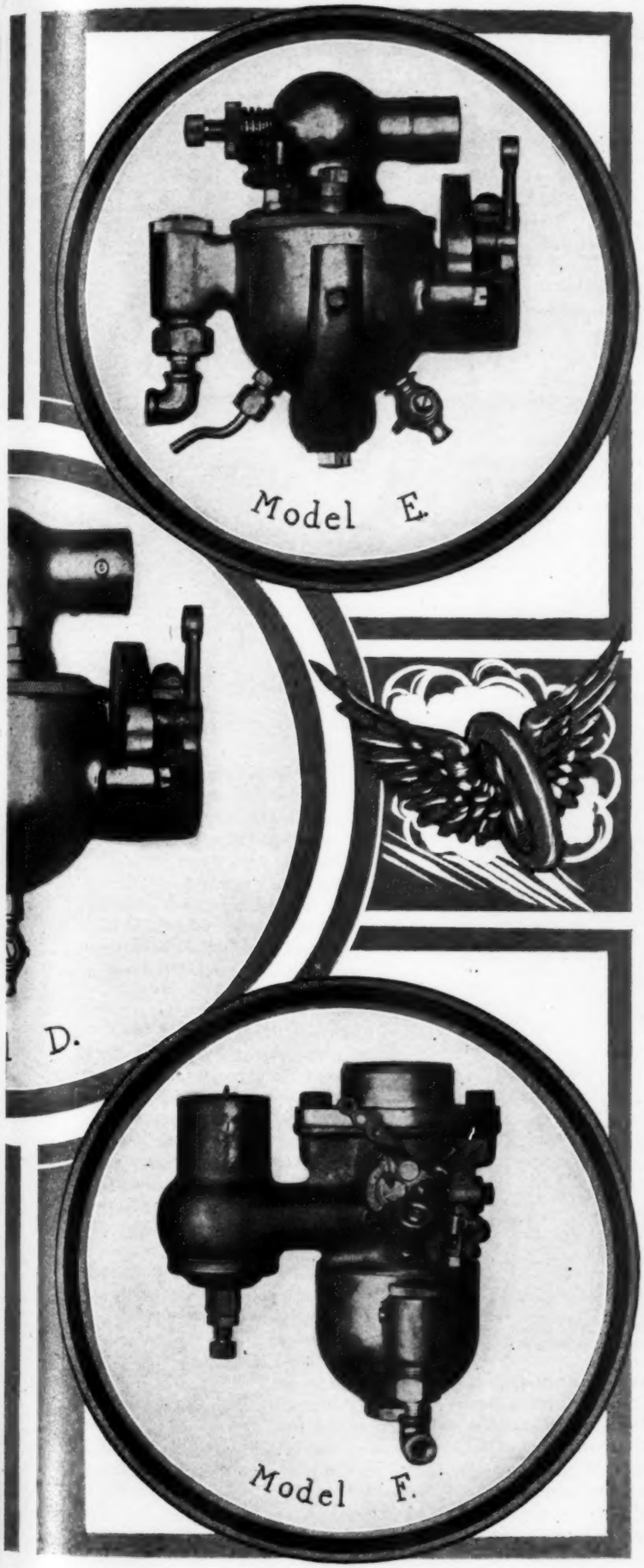
As an indication of the variety of work involved, reference may be had to Fig. 5, showing a part of the watch lathe equipment which is used in the finishing of the small parts, as needle valves, nozzles, etc. As an offset to the time required in doing the watchmaker's part of carbureter work, the dipping department, as shown in Fig. 6, is referred to, in which the heavier castings are dipped and otherwise made ready for machining at a rapid rate, in which a sand-blasting equipment plays an important part. Through the use of the sand-blast and a well-equipped dipping department, the bowls and remaining heavy parts are brought to a fine state of finish at small cost. To give an idea of the magnitude of the undertaking, reference may be had to Fig. 7, which is a general view of the assembling department, taking in about two-thirds of the space available in the assembling of carbureters. One of many tests of carbureters of this make is given below, in which the speed is advanced from the low point at 600 revolutions to a maximum of 2,000 revolutions per minute, resulting in a delivered horsepower of 14.1 at the low speed, ranging up to 32 horsepower at the highest speed.



SCHEBLER CARBURETER TEST

Needle No. 7. Very fine taper. Recommended as most suitable

Speed	Gross Load Lbs.	Tare Lbs.	Net Load Lbs.	D HP
600	50.5	27	23.5	14.10
700	51.25	27	24.25	17.00
800	51.125	27	24.125	19.20
900	50.75	27	23.75	21.40
1000	52.00	27	25.00	25.00
1100	51.00	27	24.00	26.40
1200	50.00	27	23.00	27.60
1300	50.00	27	23.00	29.90
1400	49.75	27	22.75	31.80
1500	49.00	27	22	33.00
1600	48.00	27	21	33.70
1700	47.25	27	20.25	34.40
1800	46	27	19	34.20
1900	44	27	17	32.30
2000	43	27	16	32.00



News of the Makers

Interesting Short Items Concerning the Doings of the Manufacturers

Roader Company Discontinues Its "20."—The Roader Car Company, of Brockton, Mass., has announced that it will confine its attention to making the Roader "30" instead of continuing to manufacture the 20-horsepower car that has been put on the market. The company states that the bulk of the demand seemed to be for the larger car and that in deference to it the decision was reached to discontinue the Roader "20."

Abbott-Detroit Car on 50,000-Mile Trip.—With the intention of covering 50,000 miles, mostly in the out-of-the-way places of the American continent, the Abbott Motor Company started one of its 1910 models away from Detroit November 13. The itinerary of the trip will include a long leg to Portland, Me.; thence through New England and New Jersey to Washington and Virginia; to Pittsburgh, Cincinnati and southward to Jacksonville, Fla. The northerly trip will be up the Atlantic Coast to New York. Doubling back to Detroit the car will take a course southward again to New Orleans, and thence through Texas and Old Mexico to Southern California, making a swing up to Seattle and then across the continent to Detroit.

First "Virginian" Car Turned Out.—The Richmond Iron Works Corporation, of Richmond, Va., an organization founded from a number of smaller iron works concerns many years ago, has now placed on the market the first automobile which was ever manufactured in Richmond. The corporation will operate an automobile department along with its other lines, and the machine manufactured will be known as the "Virginian."

The officers of the corporation are: M. A. Finn, president; H. H. McCurdy, vice-president; M. J. Francis, treasurer; W. P. Dessaussure, secretary; R. Massie Nolting, assistant secretary and treasurer; W. H. Woody, general manager; H. G. Wagner, automobile sales manager.

American Company Buys Indiana Plant.—Plans have been made to establish a large automobile factory near New Albany, Ind., by the American Automobile Company, which makes the Jonz gasoline pleasure car. At present the concern has plants in Kansas City and St. Louis. The machinery from both of these factories will be shipped to New Albany and the entire manufacturing business done there.

The plant of the New Albany Woolen Mills, now known as the Kentucky and Indiana Power Co., has been purchased by the American Automobile Co. for $30,000. The plant is situated within close proximity to New Albany proper and on the line of the Monon railroad. It includes about six acres of ground, the greater part of which is under roof. Work of remodeling the buildings will begin about November 20.

Berton B. Bales, president of the company, said yesterday that about $350,000 will be invested in the new factory. The machines will be turned out across the river, while the business of the concern will be transacted through the main offices of the concern in Louisville. The plant will employ about 700 people in the various departments.

Moline Auto Company Spreading Out.—The Moline Automobile Company has issued an order calling for overtime daily in the assembly department, the paint shop and the setting-up room. The overtime will extend until 8 p. m. daily. This company likewise is building an additional four-story warehouse. iThe dimensions are 60 by 130 feet and the contract price $45,000. The basement of the building will be of concrete and the remainder of brick. A sprinkling system and automatic fire equipment will be installed. The contract, which has been awarded to Henry W. Horst, of Moline, calls for completion in three months.

The company is likewise building a concrete testing track which is rapidly nearing completion and will be in use in a short time. It is located east of the plant.

Prominent Automobile Accessories

TURNING GEAR FOR HEADLIGHTS

The automatic gear for headlights shown in Fig. 1 consists of an adjustable lamp-fork mounted on a swivel post and bracket

Fig. 1—Projects headlight's rays around turns

which is bolted to the frame of the car. The bracket is connected by means of ball jointed connecting rods to the upper end of a vertical shaft that rises from the front axle near the spring, the vertical shaft being held in position by means of a clamp which fits over the axle.

At its lower end the vertical shaft carries an arm or crank which is connected by means of a connecting rod to a similar arm or crank having an eye which is attached to the steering knuckle by removing the knuckle nut and putting the base of the crank under the nut; or if the knuckle has no nut, an arm is furnished to screw into a hole to be drilled and tapped in front center of knuckle.

The gear is attached to only one of the lamps and as the car is guided and the wheels turn, the lamp turns automatically and projects its light along the road and around turns in advance of the car, keeping the road ahead lighted at all times.

This gear is manufactured by the Scranton Automobile Equipment Co., 1438 South Penn Square, Philadelphia, Pa., and is sold complete ready for attaching to any make of car.

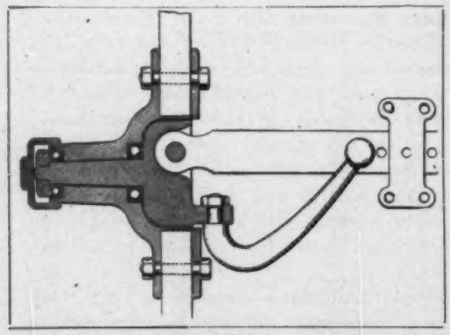


Fig. 2—Front axle designed on the caster principle

CASTER FORM OF FRONT AXLE

The caster form of front axle is made by setting the spindle 1 inch back of the center of the connecting pin on the end of the axle in the hub (Fig. 2). This gives a perfect caster for front wheels and it is claimed they will run straight ahead even if each wheel is disconnected from the other, also from the steering post.

In case the steering connections break and one or both wheels become disconnected from the steering post the car will not leave the road, perhaps to run into a fence or ditch, but will go straight ahead, giving the driver ample time to stop the car. The spindle is so connected with the end of the axle in the hub that it will bend or break the axle before it is possible to break the spindle. This axle is manufactured by the Queen Mfg. Co., Webster City, Iowa.

POWERFUL EMERGENCY JACK

Soft ground and mud are treacherous places to venture with an automobile owing to the likelihood of sticking in the mud. It would be well, especially during the winter, when country roads are likely to be

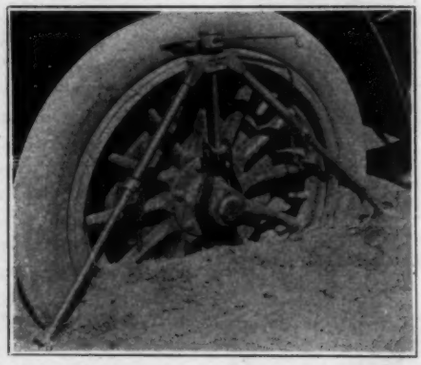


Fig. 3—A handy and powerful jack for mud runs

bad, to equip the car with some means of easily lifting it out should it become stuck. The jack manufactured by E. I. Spencer, of Wichita, Kansas, can be fitted to the outside of the hub as shown in Fig. 3 and the car lifted without having to crawl under it and find some suitable place to put a jack, and go hunting for wood to keep the car up out of the hole it has fallen into. The feet can be raised as well as the top, there being an inside worm for this purpose.

TO FRUSTRATE THE MEDDLERS

Cars that are fitted with switches that can be locked in the "off" position are less likely to be tampered with than those not so equipped. The New York Coil Co., 338 Pearl St., N. Y., has perfected such a switch. Yale locks are used, and the switch must be turned in the off position before the key can be removed.

THERMOID TIRE REINFORCEMENT

Attention has been turned of late to the better protection of tires by the advent of what are termed reinforcements.

Fig. 4—Section of the Thermoid tire reinforcement

The insert illustrated in Fig. 4 is a product of the Thermoid Rubber Company, of Trenton, N. J., and is easily adaptable for a new tire or to act as a protection for a used cover to prevent blowouts.

The reinforcement is inserted between the casing and the inner tube and consists of duck in one single piece filled with solution or compound by a secret process. It is claimed that these inserts do not minimize the resiliency of the tire and that they distribute the strain and pressure over a greater area, and as a result weak spots are not called upon to bear the full burden.

WESTEN SHOCK ABSORBERS

It is not only necessary to eliminate the sudden rebound that proves so detrimental to automobile springs, often breaking them, but also the damaging vibration.

In the construction of the Westen shock absorber (Fig. 5) there are inserted two separate friction planes—one to lessen or moderate frictional resistance that controls the vibration caused by the lesser inequalities of the roadbed and the oscillation caused by the engine, and the second or greater frictional plane that controls the excessive vibration or rebound.

These shock absorbers are manufactured by the Westen Mfg. Co., 294 Halsey street, Newark, N. J., and the prices include all attaching parts.

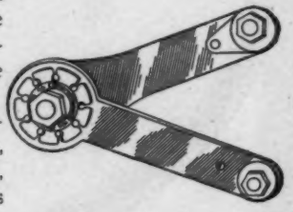


Fig. 5—The Westen shock absorber